

JULY 1917 ~ No. 139

Monthly

A Reference for Buyers

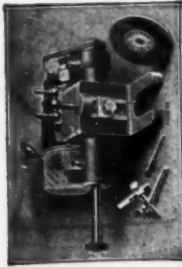
HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

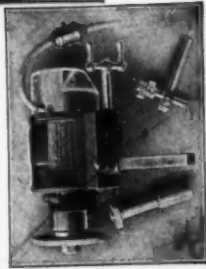
Published by
A-H HITCHCOCK
1220-1235 Caxton Building
Chicago

HISEY Electric Drills and Grinders

Most complete line of
Portable Electric Tools



Combination Internal and External Grinder
Two Sizes: $\frac{1}{4}$ and $\frac{1}{2}$ Horse Power

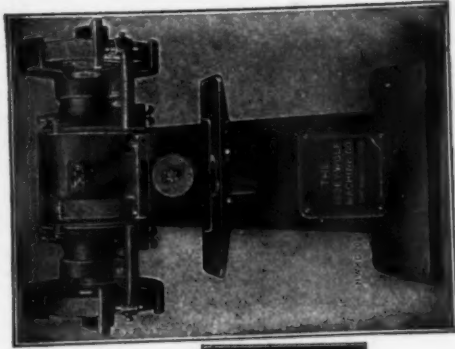


Tool Post Grinder
Ten Styles and Sizes

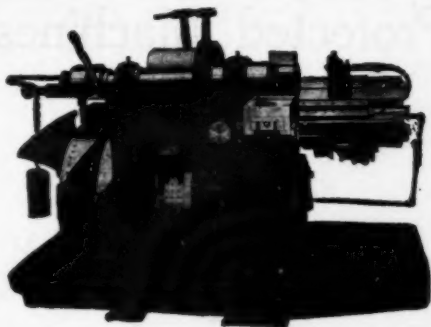


"Hisey" Hand Drill
Eight Styles and Speeds
Write for catalog HH

The Hisey-Wolf Machine Co.
Cincinnati, Ohio
New York Office, 50 Church St.



Ball Bearing Floor Grinder
Also made with Base for Bench Mounting
Five Sizes: $\frac{1}{2}$ to 5 Horse Power



Accuracy on the Gridley

On bar or single piece chucking work where accuracy is a vital feature the Gridley Automatic Turret Lathe proves its real worth.

Its construction permits higher cutting speeds, coarser feeds and heavier cuts to be made without sacrificing precision.

Its design is unique in that the turret is parallel to but not concentric with the spindle, thus permitting unusually heavy and solid bearing construction. Moreover, one tool can be mounted behind another on the slide and tools are held rigid, close up to the work.

It is this rigid construction and correct design of the Gridley that result in clean cut, accurate production of any work up to 5" in diameter.

*Attractive deliveries on all sizes of
Gridley Automatic Turret Lathes.*

Send samples or blue prints.

THE NATIONAL ACME COMPANY

GENERAL OFFICES **Windsor, Vermont** CANADIAN SCREW PLANT
CLEVELAND MONTREAL, P. Q.

Branch Offices:

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

*Makers of Gridley Single and Multiple Spindle Auto-
matics at Windsor, Vt., and Acme Automatics, Threading
Dies and Screw Machine Products at Cleveland, Ohio*

Protected Machines



Make
Contented
and
Efficient
Workmen

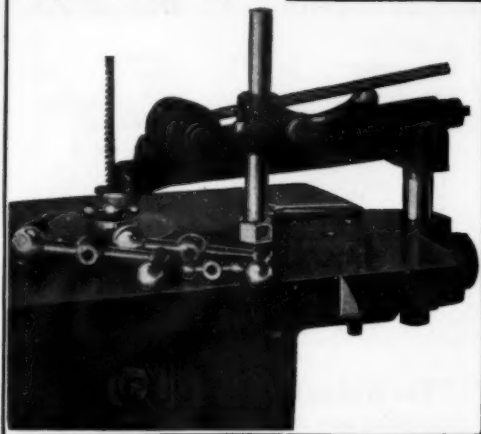
Guards like this can be constructed in your own shop by your own workmen at a minimum of cost and labor. Let us send a free copy of our "Econo Expanded Metal Belt and Machine Guards."

North Western Expanded Metal Co.

931 Old Colony Bldg.,

Chicago, Ill.

How many small jobs
Like this have you?



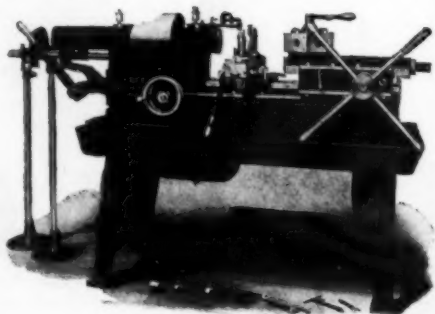
Davis Keyseaters

have saved hundreds of
firms time and money
for more than two score
years. We can do the
same for you.

Write for Catalog

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

1st Pierce Makes New Records For Rapid Turning of Bar Stock



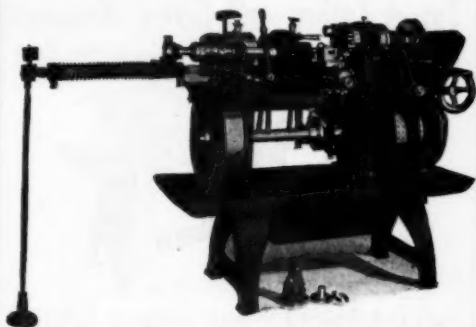
"The Widest Range Screw Machine"

is making new records in many shops today. Its big output practically insures rock-bottom economy. It is a well-balanced combination of accuracy, simplicity and power—the counter-shaft pulls full 15 h. p., while other machines of this type slip under a pull of 5 to 10 h. p.

The capacity is $1\frac{1}{8}$ -in. diameter by 8-in. long. It is no longer necessary to buy large, costly machines to get the diameter and turret travel. And every detail has been carefully attended to—the bearings are all of the best white metal obtainable.

*It costs only a postal to have full information sent to you
Have it mailed now*

Pierce Machine Tool Company
617 W. Jackson Blvd., Chicago, Ill.



Chicago Automatics

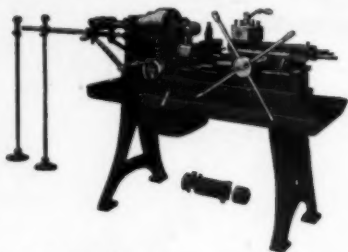
No. 1 $\frac{3}{4}$ in. Capacity

No. 2 $1\frac{1}{4}$ in. Capacity

No. 4 2 in. Capacity

For Sale By The
John Macnab Machinery Company
90 West St., New York City

Turret Lathes and Screw Machines



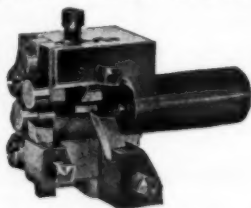
built and designed to give maximum permanent accuracy and efficiency. Reasonably priced.

Himoff Machine Co., Inc.

134 Mott Street,

New York, U. S. A.

Watson Model E All Steel Tangent Cut Box Tool

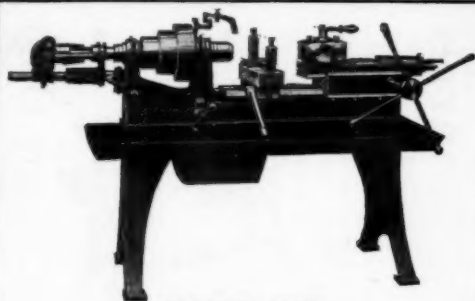


For use on Small Automatic Screw Machines

Send for circular and prices.

The Biggs-Watterson Co.

Cleveland, Ohio



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

**Designed for Rapid Manufacturing of
Parts Requiring Several Operations**

MADE IN FOUR SIZES:

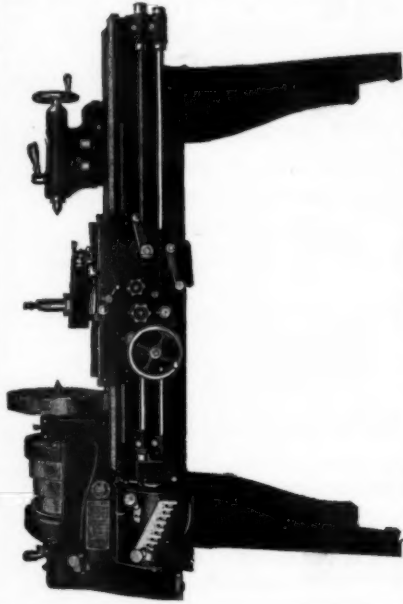
- No. 2 { $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{3}{8}$ " Hole Through Spindle.
- No. 3 { $1\frac{5}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{7}{8}$ " Hole Through Spindle.
- No. 4 { $1\frac{3}{4}$ " Wire Feed Capacity, Geared Head
 { $2\frac{1}{2}$ " Hole Through Spindle.
- No. 5 { $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{3}{4}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.**

Manufactured By

Smurr & Kamen Company
313 N. Whipple St., Chicago, Ill.

Monarch Lathes



give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes.** Built in four sizes and in all styles and with any attachments desired.

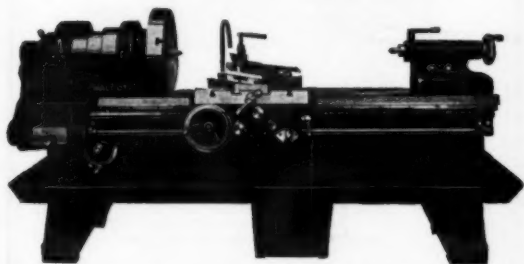
*Sold by a leading Machinery Dealer
in every machinery center.*

The Monarch Machine Tool Co., Sidney, Ohio

14, 16, 18, 20, 26 and 28 Inch

Walcott Lathes

For Tool Room and Factory



Walcott 20" Lathe with Quick Change Gear Box, 3-Step Cone and Double Back Gear, Oil Pan and Pump

Walcott Lathes are powerful, convenient, safe, and the very embodiment of accuracy.

They also contain many excellent features that are not found in other high-grade lathes.

Especial attention has been given to those parts which usually show the first wear in a lathe, with the result that we believe we have increased the wearing qualities of Walcotts over any other lathes made.

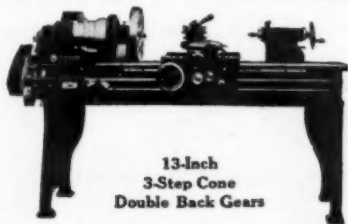
We furnish oil pan and pump equipment with all sizes; square tool post on saddle and hexagon tool post on saddle for all sizes; hand feed turret on bed of 14 and 16 inch lathes, and power feed on bed of the larger sizes.

*We invite your most careful investigation.
What size do you need now? Let's get together.*

Walcott Lathe Co.

Jackson, Michigan

"FILSMITH"—A Lathe of Quality



**13-Inch
3-Step Cone
Double Back Gears**

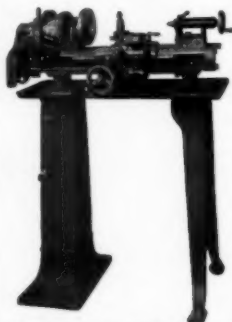
Of new and pleasing design, with great power for the rated swing, and built by experienced workmen of the best materials, it is a rugged tool that stands the strain of hard service. We have added a number of new features and shall be glad to tell you about them.

PHILIP SMITH MFG. CO., SIDNEY, O.

"PREPAREDNESS

VS

RIISING COSTS"



Are you prepared to make those small parts the most economical way? The Dalton Way.

With a "Dalton Six" type B-4 as part of your shop equipment, is to be prepared to combat your most powerful enemy, "Rising Costs." Add a Dalton Six to your battery of machinery.

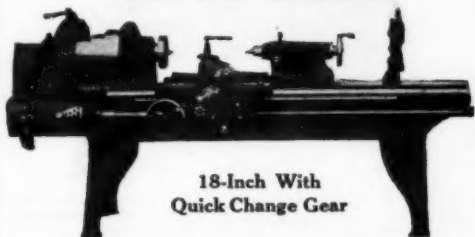
You will then be Prepared to meet the enemy.

Send for Bulletin B-602

**DALTON MACHINE CO., Inc., 1911-15 Park Av.
NEW YORK, U. S. A.**

"Chards" For Super-Quality

Of the Practical Kind



**18-Inch With
Quick Change Gear**

"Chard" Super-Quality Lathes are made in 16", 18", 20", 24" and 28", semi and quick change, with four-step back gear and three-step double back gear.

Our long experience in the *practical* end of manufacturing high-grade lathes has been utilized to the fullest for the purpose of building into the "Chards" a combination of the most practical shop qualities. Our experience has been practical and our lathes are practical--simple, massive, powerful, accurate, convenient. They will bore holes through bronze without tolerance of any kind—one of many tests which can be applied to demonstrate their unusually sturdy and careful construction.

*To know the "Chard" is to want it.
May we describe the sizes you need now?*

Chard Lathe Company

New Castle, Ind.

DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.
VONNEGUT MACHINERY CO., Indianapolis, Ind.
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
OGDEN R. ADAMS, Rochester, N. Y.
HILL, CLARKE & CO., Chicago, Ill.
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.
BAIRD MACHINERY CO., Pittsburgh, Pa.
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.
MONARCH MACHINERY CO., Philadelphia, Pa.
PATTERSON TOOL & SUPPLY CO., Dayton, Ohio.

Cleveland 16" Quick-Change Lathes



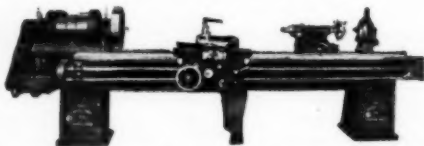
**3-Step Cone and
Double Back Gears
or
4-Step Cone and
Single Back Gears**

We guarantee them to reduce 50-point carbon steel $1\frac{3}{4}$ inches at $1/16$ feed. They are heavy, accurate, durable, convenient and beautifully finished. They are built for business.

Write for the full details of construction

**The Cleveland Machinery & Supply Co.
Cleveland, Ohio**

Sidney Heavy Duty Lathes 15", 17" and 19" Swing



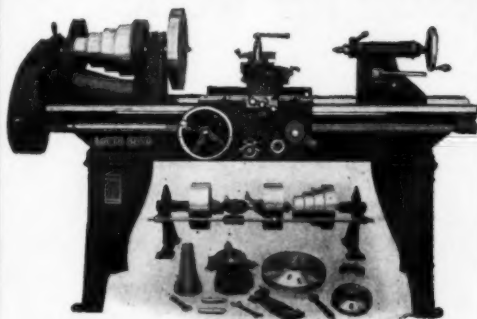
19"x12', D. B. G., with Leg Center Support

THE BEST COMBINATION of rigidity, efficiency and price is found in Sidney Lathes. They are extremely rigid, highly efficient, and are sold at a close price for quality.

Get in touch with us; you will be glad you did

THE SIDNEY TOOL CO., SIDNEY, OHIO

South Bend Lathe



16 in. x 6 ft. Screw Cutting Engine Lathe

South Bend Lathes have been on the market eleven years. Dealers in every large city.

Swing Over Bed, Inches	Length of Bed, Foot	Dist. Bw. Centers, Inches	Hole Thru Spindle, Inches	Approx. Weight on Skids	Code	Price
13 $\frac{1}{4}$	5	32	$\frac{3}{8}$	1,000	Hasen	\$248
15 $\frac{1}{4}$	6	40	1 $\frac{1}{8}$	1,425	Jadin	320
16 $\frac{1}{4}$	6	36	1 $\frac{1}{8}$	1,700	Juddo	393
18 $\frac{1}{4}$	8	57	1 $\frac{1}{8}$	1,950	Kell	515
21 $\frac{1}{4}$	10	75	1 $\frac{1}{2}$	3,300	Penti	765
24 $\frac{1}{4}$	12	95	1 $\frac{1}{2}$	4,420	Polly	1,108

Made with straight or gap bed. Price includes all the equipment shown in illustration.

GUARANTEE

Write your own guarantee—We'll abide by it.

Send for free catalog illustrating and describing entire line.

South Bend Lathe Works

Established 1906

South Bend, Ind.

East End

**"In the Toolpost
ready for work"**



That's where you will always find the tools when you use

The Universal Turret Toolpost

Increases the output of your lathes—eliminates tool changing—**FITS ANY LATHE**—does same work as expensive turret lathe equipment.

Prompt delivery—Write for particulars.

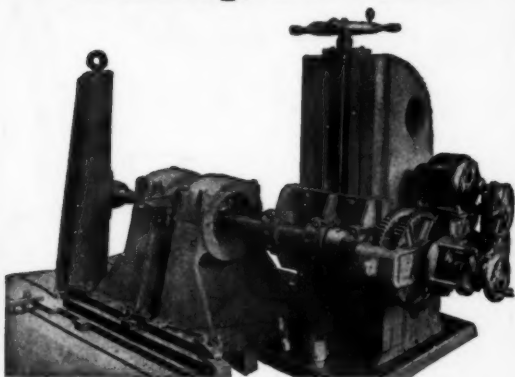
Magna Machine Company

Suite 481, 50 Church St., New York

Also Builders of High Grade Special Machinery, Jigs, Tools, Gauges and Fixtures

All Kinds Pattern Work Solicited

A Shop Picture



Pedrick Column Boring Machine

just as it appears at work without giving the artist a chance to make it look prettier.

It's all there, 3 feeds automatic, quick hand movement of bar, motor drive with variable gearing for different speeds, strong, powerful and accurate.

You will search in vain for complication or a lot of elaborate details. These parts were purposely omitted. Simplicity, moderate price and all the mechanism necessary to do the work are the features you will find.

*For further information, we refer you to our circular
Why don't you ask for it?*

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Mfrs. Portable Boring Bars, Crank Pin Machines, Pipe Benders,
Portable Millers, etc.

YOU Want Tool Holders that have MADE GOOD

Armstrong Tool Holders

Were Awarded The

Grand Prize

The Highest Possible Award at the Panama-Pacific
International Exposition—1915



They Always Make Good

They Are Used in Most of the Big Machine Shops of the World

Send for Catalog

Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.



Hartford Taper Gages

They enable you to secure
accurate tapers—improving
your product.

They save time — aiding
production and reducing costs.

And they are inexpensive.

What more need be said?

Why not now?

Hartford Special Machinery Co.

285 Homestead Ave.,

Hartford, Conn.

How R..... Cut Costs

On High Speed Steel

R....., Super in a large Middle West machine shop thought his H. S. tool production was pretty expensive. So he dug into the matter and found one great leak came from finished tools scrapped as a result of being spoiled in high-heat hardening fires. He found this item alone had averaged \$180 per month over a period of five months. So R..... sent for a bag of

HE TZY
Heat Easy

H. S. Hardening Compound, and after a two months' trial of it he failed to find a single instance where a tool treated the "HeTzy" way had been scrapped. So he drew up the following little statement:

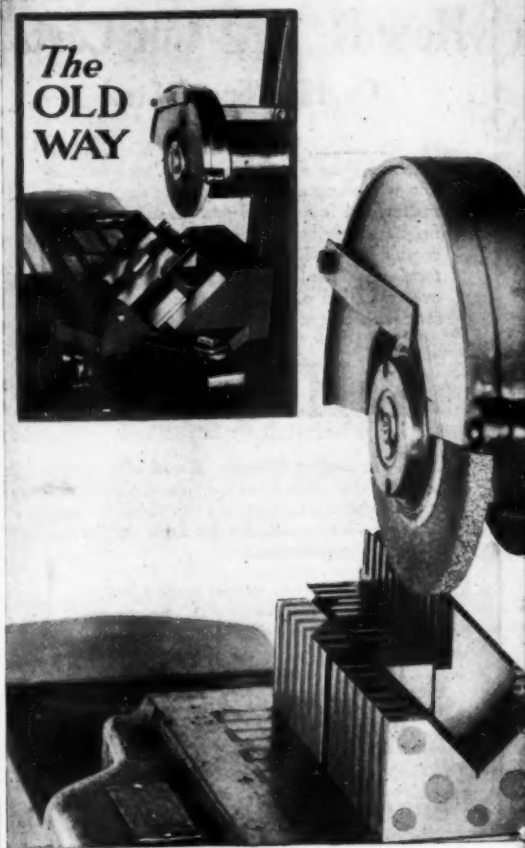
\$180.00	previous average monthly loss
8.33	cost of the "HeTzy" used per month
<hr/>	
\$171.67	saved per month.

R..... is now one of our 300 satisfied customers.

If you have H. S. Steel hardening problems, ask for Booklet 46.

Bennett Metal Treating Co.
Elmwood, Conn.

The
**OLD
WAY**



Ancient and Modern

G
Y

hold
The
most
RAD
shap
or b
small

and
from
loss.
ed p

show
to fit

La

Kar F

Greater Earning Power *For* Your Magnetic Chuck

RADNETIC FIXTURES will give remarkably increased efficiency

The Magnetic Chuck is in itself an excellent tool for holding flat and regularly shaped pieces of iron or steel. The *new* RADNETIC Fixtures have widened its field almost indefinitely. On the opposite page is shown the *new* RADNETIC V-Block being used to hold an irregularly shaped piece on a Magnetic Chuck, *without the use of nuts or bolts of any description*. Compare this picture with the smaller cut showing the old method of doing the same work.

RADNETICS are made of alternate laminations of steel and a non-magnetic substance, and conduct the magnetism from the Chuck to the work with only a small percentage of loss. The magnetically insulated steel sections act as extended pole pieces. That is the secret of their holding power.

RADNETICS are made up in Parallels, V-Blocks (as shown)—Protractor-Blocks, Taper-Bars and special shapes to fit any standard Magnetic Chuck.

*Send for descriptive catalogue and price
list of these remarkable NEW time-savers*

Lawson & Company, Inc.
140 Cedar St., New York City
Sole Distributors.

Kar Engineering Co., Inc., New York City, Manufacturer and Patentee

SKINNER

Drill Press Equipment



The Chuck

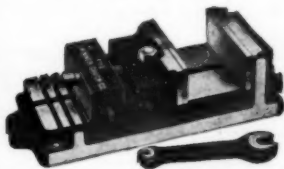
A 3 Jaw "Geared Pattern"
Hand Operated Chuck

Designed for accuracy.
Gears "beneath the surface."
Made entirely of steel.
Furnished in four sizes.

The Arbor

Made of STEEL, Tang end
HARDENED and ground.
Fitted to gauge.

All
Sizes
and
Styles
Carried
in
**S
T
O
C
K**



The Vise

Designed for holding work on the
drill table. Made in 5 sizes.

Let us send you a complete set of printed matter

The Skinner Chuck Co.

San Francisco Office:

Rialto Building.

London Office:

149 Queen Victoria St.

Factory and Main Office:

New Britain, Conn.

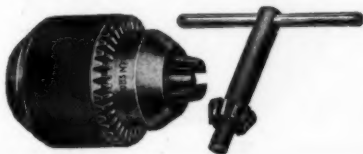
New York Office:

94 Reade Street

JACOBS IMPROVED DRILL CHUCKS

It has been demonstrated by thousands of Drill Chuck users all over the world, that the Jacobs Improved Drill Chuck embodies CONVENIENCE, EFFICIENCY, ACCURACY and DURABILITY.

Made by
The Jacobs Mfg. Company
Hartford, Conn., U. S. A.





We manufacture a great variety of
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.
Established 1862 **Hartford, Conn.**

**Do You Know the Advantage of
 Sweetland Chuck Service?**



Better work. More work. Why not investigate?
HOGGSON & PETTIS MFG. Co., New Haven, Conn.

UNION

Iron Body Independent Chuck No. 118



A strong, well made chuck of the Independent type for general machine shop work.

Made with socket screws giving a long bearing on the jaws, hardened steel thrust bearings, large jaws, double bearing jaw ribs in sizes from 12 inch up.

Twenty-Six Sizes

Union Manufacturing Co.

New York Office,
26 Cortlandt St.

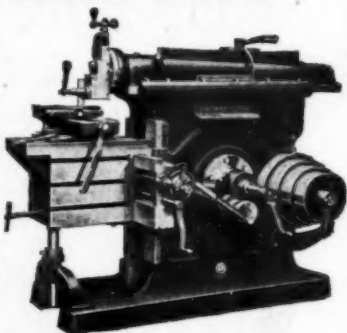
New Britain, Conn.

Makers of a Complete Line of Chucks

SHAPERS

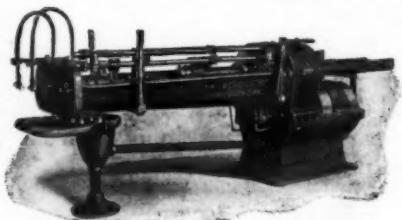
12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

24", 28", 32"
Geared
Shapers of
the Belt Shift
type.



The Smith & Mills Co. Station B.,
Cincinnati, O., U.S.A.

Broaching Machines And Broaching Tools

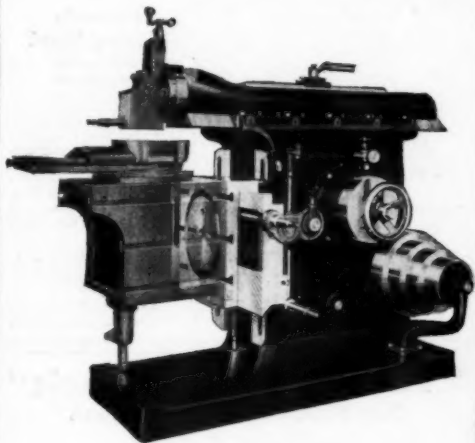


Our Famous Double Machine

The Most Complete Line In The World. We make our machines in 5 sizes and 11 types. *Send for particulars.*

THE J. N. LAPOINTE CO., - - New London, Conn.

Milwaukee Shapers



MILWAUKEE Back-Geared
Crank Shapers are built in
16-in., 20-in. and 24-in. sizes.

UNEXCELLED in Rigidity,
Accuracy, Power, Production
and Simplicity.

Milwaukee Shaper Co.

1144-1146-1148 Holton St., 518 Prairie St.,
Milwaukee, Wisconsin

For Calking Fences, Grating, Etc.

Better and at Less Cost



Brown's Calking Tool

is a wonderfully handy and practical device for calking iron fencing, window guards, jail work, fire escapes, and any work which requires calking through a railing. It is simple, adjustable, effective and very rapid in operation. It calks with a pressure, not with a blow, so that it does not jar and loosen the work already done.

*Write for description and
send sample for calking*

T. W. Brown & Son,

1135 Market Street,
Chattanooga, Tenn.

"The Handiest Rack"

For Pipe, Shafting and Bars



Costs but little.

Lasts indefinitely.

Saves time.

Saves a lot of muss.

Saves 75% in space.

Makes counting easy.

Separates sizes and kinds.

You can find what you want.

You pile or remove stock quickly.

Saves accidents—one in our own plant caused us to make the first Racks for ourselves, at a higher cost than we sell them for now, and we were tickled to death. We are passing a good thing along to you.

Can ship promptly now

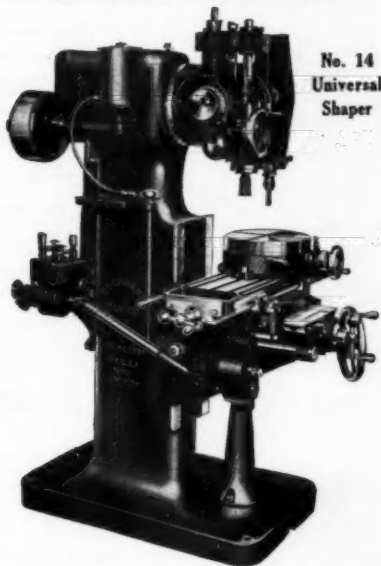
Wm. S. Yohe Supply Co.

232 Second St., S. E.,

Canton, Ohio

A Universal Precision Machine

Of Especial Economy and Accuracy
In Die Making and Tool Room Work



No. 14
Universal
Shaper

AT ONE CHUCKING it performs many operations which heretofore have required various machines and several settings. While that one feature alone removes the cause of most inaccuracies, this machine does even more, for it accomplishes these results with a refinement of accuracy that makes most or all hand filing unnecessary. It bores, mills, reams, shapes or drills at any angle, and it combines precision with adaptability and economy to such a degree that no up-to-date tool room should be without it.

This isn't half the story. For the rest, write to—

Cochrane-Bly Company
Rochester, N. Y.



Fairbanks Hammers

25 to 300 lbs.

Belt or Motor Drive

These Hammers Embody
a Design and Workman-
ship that are Unsurpassed.

Send for Catalog

United Hammer Co.

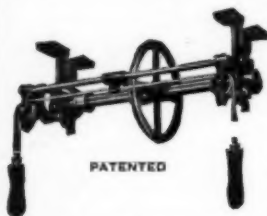
Oliver Building, Boston, Mass.

SALES AGENTS

The Fairbanks Company—Albany, Balti-
more, Boston, Bridgeport, Buffalo, Chicago,
Hartford, Newark, New Orleans, New
York, Philadelphia, Pittsburgh, Providence,
St. Louis, Syracuse, Havana, London,
Glasgow, Hamburg, Paris.

Hill, Clarke & Co.—125 North Canal St.,
Chicago, Ill.

Countershaft for Grinder Work



PATENTED

"DALTON" (Patented)
Grinder Countershaft,
is designed for use on
small lathes of all
makes, using either In-
ternal or External Grind-
ing Attachments.

The Hangers are uni-
versal in adjustment for
use upon either ceiling
or wall.

Manufactured only by the makers of the "DALTON SIX" Lathe.

Send for Bulletin

DALTON MACHINE CO., Inc., 1911-15 Park Av.
NEW YORK, U. S. A.



Terrell's Sanitary Steel Lockers

They should be included in the equipment of every modern factory as a mere matter of course. And if you are still in that old building you need them all the more.

They also afford the best investment, for while they are built of indestructible steel their first cost is not a great deal more than that of makeshift wooden fixtures, they require no repairs or renewals, and they can be moved or rearranged without damage.

Write for illustration, description and prices

Terrell's Equipment Company
Hall & Division Sts., Grand Rapids, Mich.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
 " No. 0 32 " "
 " No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
 " No. 9 Tilting Table
 " No. 10

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
 12, 16, 20, 24 and 30 in., 7 ft. tables
 and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1214-1228 Washington Boulevard, Chicago





You Need This Book!

If you are a User of Electric Motors or a Manufacturer marketing Motor Driven Machines, this little Monthly Booklet will interest you.

It contains description and prices on a large Stock of Motors—sizes $\frac{1}{2}$ to 100 H. P., which we can ship *immediately* from stock—Motors which cannot be procured from the factory in less than six months.

Our Motor List No. 22 is just out! Ask for a Copy and we will mail Booklet to you monthly.

**We want to buy Motors as well as to sell
 What have you available?**

 **THE W.G. NAGEL ELECTRIC CO.** 
 TOLEDO, OHIO



Dwight Slate Marking Machines

Hand and Power
In Several Styles

—
We also make
a specialty of

Die Cutting

For these machines

We Have

Expert Engravers

*Write for the
Marking Machine
Catalog*

An Improved Filing Machine

The filing machine above illustrated is strong, durable and thoroughly practical, and is recommended for its accuracy, convenience and productive capacity.

The head may be tilted to any degree, the stroke is adjustable from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches, graduated head gives proper angle at a glance, and an adjustable chuck permits the use of standard straight files.

No filings can drop into working parts, which are above table. File breakage is reduced to a minimum. All bearings are phosphor bronze. In a word, it is of strictly modern design and construction throughout.

Write for description, anyway—no obligation to buy

The Noble & Westbrook Mfg. Co.
Hartford, Conn., U. S. A.

Quickwork Rotary Shears

Never Fail to Decrease the Labor Costs from 25% to 50%;

Never Fail to Increase the Output;

Never Fail to Do Better Work.

Cuts straight lines as well as any other Rotary Shear, and in addition will cut the most irregular, serpentine and zig-zagged lines across the sheet with one passage of the metal; or it will cut any shape or opening in a sheet without cutting in from the side.

Has three speeds; both cutters driven and the metal is self-feeding, and comes through with smooth straight edges. Send for new catalog.

THE QUICKWORK COMPANY

Successor to H. Collier Smith, Detroit.

Detroit Office and Salesroom, 807-815 Scotten Avenue, Detroit, Mich.



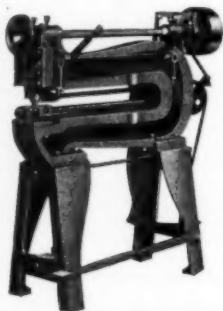
Twelve Sizes

Cutting any thing from the thinnest sheets to $\frac{3}{4}$ "

Steel Plates.

Main Factory and Office
St. Marys, Ohio.

The New Gray Sheet Metal Cutter



Cuts sheet metal up to 3-16" thick at the rate of 20" to 30" a minute

It cuts intricate patterns.

It leaves the metal flat, with clean, uncrimped edges—not like a rotary shear.

With labor becoming more and more scarce and costly, it shows a wonderful economy over cutting by hand.

It's worth investigating

W. J. SAVAGE CO., Knoxville, Tenn.



Have You Ever Stopped To Consider?—

Saving only $1/16$ " on each cut, that 50 lbs. of material are saved on 100 cuts of 6 in. round, or 200 lbs. on 12 in.

Chances are your savings would be several times this, depending on your cutting-off equipment. At the present high cost of material this saving would pay for a Peerless High Speed Heavy Duty Metal Cutting Saw in a remarkably short time.

Some of the largest manufacturers after an actual test have repeated their order, and such concerns that heretofore have been unable to obtain satisfactory results from this type of cutting-off machinery.

The beauty of our proposition is—you can try this machine out for thirty days under your own conditions, and if it does not come up to your expectations we will gladly take it back and pay the freight both ways.

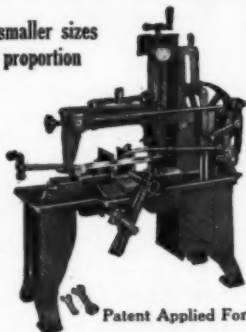
Peerless Machine Company
1609 Racine Street, RACINE, WISCONSIN

Only 10 Minutes to Cut 6-in. Steel

**The Marvel No. 4 cuts smaller sizes
of cold rolled steel in proportion**

Cuts on the draw stroke and lifts free of the cut on the return. A graduated free wheel gives any desired pressure on the saw blade.

Machine stops automatically when piece is cut off, and can also be set to stop at any desired depth in the cut. It embodies speed, accuracy and expert workmanship. We also make other hack saws, punches and shears.



Write for Circulars

Patent Applied For

**Armstrong-Blum Mfg. Co., 341 N. Francisco Ave.
CHICAGO, ILL.**

Saves High Priced Material

A Thin, Square Cut—No Grinding Necessary

NO MATTER whether it is high speed steel; tubes, rods and bars of brass, copper or aluminum; reamers, taps or drills, Peter Bros. Abrasive Cutter saves labor, material and time. Doesn't draw the temper, and returns its own cost in a short while.

8" Size \$17.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to 1" square.

12" Size \$50, with C. S.

Cuts up to 2" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

**Write us or ask your dealer
PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.**



"Racines" in Your Cutting-off Department will pay well

The very ease of operation of a Racine will make a big saving in repairs.

One blade on this machine will do the work of six on any other machine. Its easy motion makes this possible. By its special strength and construction it literally "eats" steel. The blade sinks into a bar with surprising speed. It will pay you to have a Racine.

*Let us tell you why so many firms have installed
Racines in their cutting-off departments.*

Racine Tool & Machine Co.

1500 Junction Ave. S.,

Racine, Wis., U. S. A.



Manufacturers:—

Let me figure with you on your requirements. Send blue prints for estimates on:

**Tool Making,
Stampings,
Special Machinery,
Machine Parts,
Screw Machine Work.**

First-class shop, expert workmen

R. G. Clyne, M. E.

Columbia Bldg.,

St. Louis, Mo.

Did you ever ask us to make those screw machine collets, with regular or irregular holes?

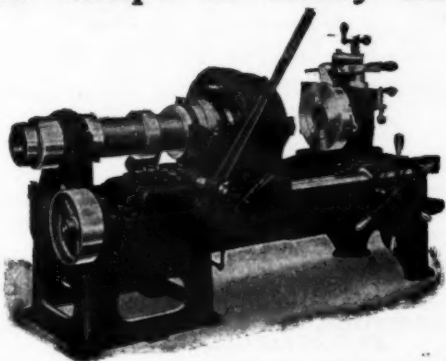
We are prepared to make good deliveries.

Why not try us next time?

Quantities never too small or too large to interest us.

Hardinge Brothers, Inc.
Chicago, Ill.

Pipe Threading Machines For Shops of Every Size



Not only is there a size for your every requirement, but every B. & K. is a machine of quality—efficient—accurate—powerful and durable—the kind that makes maximum production at low cost a matter of easy attainment every day in the year.

B. & Ks. cut and thread pipe from $\frac{1}{4}$ " to 18", and our line affords you a choice of 17 styles and sizes. Every machine is equipped with the famous Peerless Adjusting Mechanism, which adjusts instantly to the thousandth of an inch without the aid of tools.

B. & Ks. have proven their quality in hundreds of shops. Write us about your needs—now.

Bignall & Keeler Machine Works
Edwardsville, Ill.

Gwilliam Service

Ball and Roller Bearings

Annular—Single and Double Row
Ball Thrust—All Types Taper Roller—Standard
Roller Thrust—Collar Type Pressed Steel—All Types

Automobile, Motor Boat and Truck Bearings Steel Balls

Sole Agents for the U. S. of
The Bowden Patent Wire Mechanism
for the Transmission of Reciprocating Motion Through
a Flexible and Tortuous Route.

Send for circular

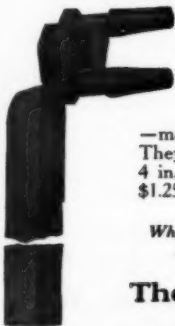
The Gwilliam Company

Engineers and Specialists

NEW YORK, 253 W. 58th St. (at Broadway)
PHILADELPHIA, 1314 Arch St.

You Cannot Afford Accidents

In Putting Belts on Moving Pulleys



And you can less afford to
have your men hurt in that
way when our—

“Safety First” Belt Sticks

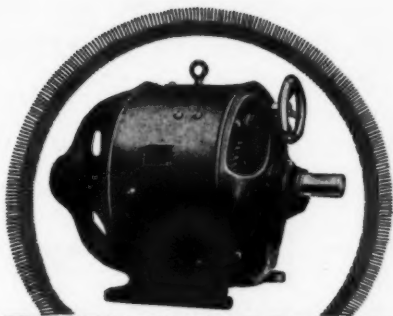
—make such accidents impossible.
They are made in two sizes, 1 to
4 in. and 4 to 6 in., at one price,
\$1.25 each or \$12 a dozen.

Why not order a few on trial NOW?

DON'T wait for an accident

The Ready Tool Co.

Bridgeport, Conn.



RELIANCE

What a User Says:

A master mechanic writes us as follows regarding a Type AS Reliance Adjustable Speed Motor operating a bolt cutter in his shop:-

"I do not hesitate to state that it is the Reliance Motor above all other motors with which I am familiar that makes the extraordinarily successful operation of this particular motor-driven machine possible. The control is perfect and the infinite number of speeds obtainable can be utilized for a great gain in time, production and ease of handling."

Type AS motors run at any speed over any range up to 1 to 10.

Bulletin 1010 gives details.

(We build constant speed motors)

Reliance Electric & Engineering Co.
1050 Ivanhoe Road Cleveland, O.

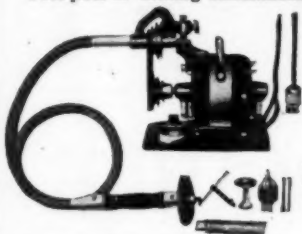
Strand Flexible Shaft Portable Grinder

Made in four sizes: 1-10, $\frac{1}{4}$, $\frac{1}{2}$, 1 H. P.

Adaptable for heavy or light grinding.

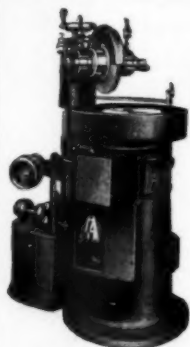
A universal portable flexible tool for every shop.

Tool post or drilling attachment and extra ball-bearing handle furnished also.



*Write
for
catalog
today*

R. G. Haskins,
547 Washington Blvd.
Chicago, Ill.



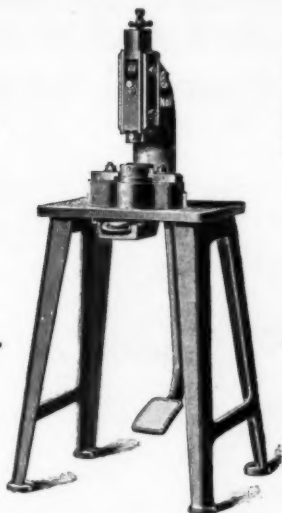
12-Inch Bristol

Precision Rotary Surface Grinder

A simple, durable and convenient machine of extreme accuracy, for the rapid grinding of flat, convex and concave work.

*We would suggest your
prompt inquiry*

The C. G. Garrigus Machine Company
Bristol, Conn., U. S. A.



**Ready
for
Delivery**

Accurate Light Punch Press

FOR THE MANUFACTURE of novelties from sheet metal, including such operations as stamping, blanking, piercing, bending, forming, perforating, embossing, shearing and wire cutting. The No. 1 has exceptional strength for its size.

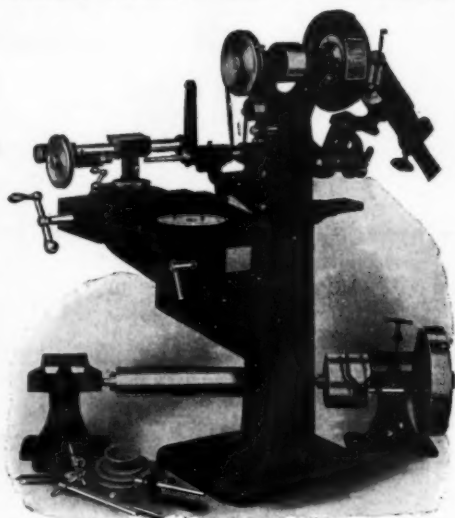
It is carefully adjusted to secure accurate working of the dies and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring the operator. Material and workmanship the best.

*Price is moderate. Your order can be filled promptly now—
but don't depend on tomorrow.*

E. O. PARTRIDGE, 2041-2049 W. Lake St., CHICAGO

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Bench Tapping Machines, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels.

W. & M. Style BX
Cutter, Reamer and Drill Grinder



CAPACITY:

Face and Side Milling Cutters,.....	up to 12" Diam.
Angle and Plain Milling Cutters,.....	up to 8" Diam.
Gear Cutters and Hobbs,.....	up to 5½" Diam.
Reamers (Straight or Taper),.....	up to 17" Diam.
with Flutes not over 11½ in.	
Centers Swing Work, 7¼x17" - 11½" Movement.	

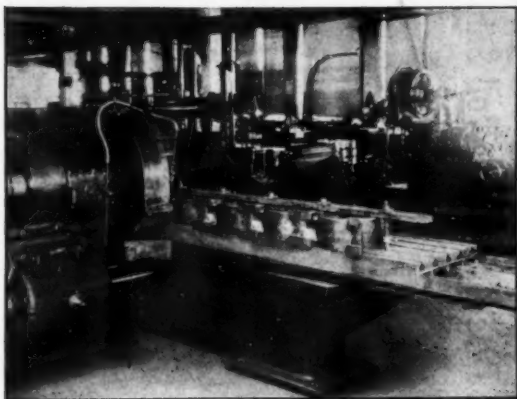
Full Particulars on Request

Wilmarth & Morman Co.

Makers of Drill—Surface—Universal Grinders

2185 Monroe Ave., N. W. Grand Rapids, Mich., U. S. A.

4 Times The Production



The motor feet shown above are in the shop of one of the country's largest electric motor manufacturers. They used to be milled at the rate of one in fifteen minutes. Now they are ground on the **DIAMOND HEAVY FACE GRINDER** at the rate of four in fifteen minutes.

Production has been quadrupled and the cost for grinding wheels is much less than for milling cutters and their upkeep.

Also note the simple fixture used for holding four motor frames at a time. The problems of thrust are simple in grinding.

*The Diamond Face
Grinder circular H-3
will be sent on request.
No strings attached.*



*We also manufacture
Floor Grinding and Pol-
ishing Machines, Wet
Tool Grinders, Disc
Grinders, and Surface
Grinders.*

DIAMOND MACHINE CO., PROVIDENCE, R.I.

Combination Disc Grinder & Roll Sander

"Best machine ever built for pattern shop use"

Patented



The No. 20 Gardner combines both the disc wheel and the sanding roll into a compact, sturdy and accurate machine. The disc wheel is used for producing flat surfaces and external curves; the sanding roll perfects internal curves which have been roughed out on a band saw.

Both this disc wheel and the roll remove stock with extreme rapidity and accuracy. With this machine at hand your apprentice boy can do, with greater speed and quality, much of the work formerly done by your best man. A Gardner No. 20 soon pays for itself in any modern pattern shop working four or more men.

Get the details today

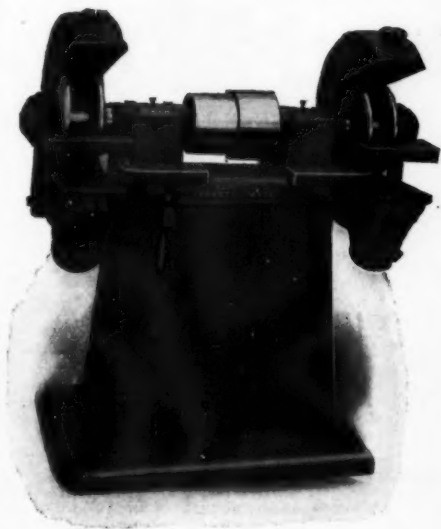
Gardner Machine Co.

The Disc Grinding Authorities

Beloit, Wisconsin

Largest Disc Grinder Builders in the World

Grind it on a "Blount"



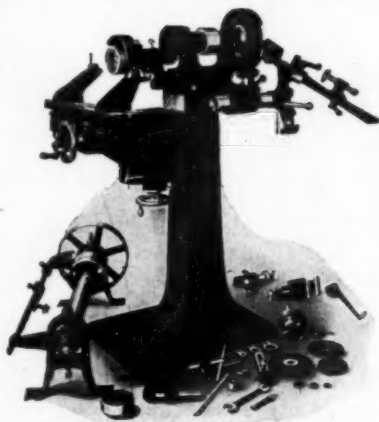
No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.

Not the first—But **THE LATEST**—
the best—the most universal grinder

The Grand Rapids No. 2



Just Think!

CAPACITY: Between centers up to $9\frac{1}{2}$ " diam. 20" long. Face Mills up to 12" diam. (with raising blocks up to 16" diam.), Drills up to $2\frac{1}{2}$ " diam., and other jobs in proportion.

RANGE: Anything that can be done on any other machine made—and then some.

PRICE: So low it will surprise you.

Get the circular today

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W.

Grand Rapids, Michigan, U. S. A.

Simple, Convenient Attachments

Are provided with the

Greenfield

Trade Mark Reg. U. S. Pat. Office

Universal Grinder



Each Attachment is designed to serve a single purpose. This means that they are simple and without complicated adjustments to make them serve different purposes.

This makes it easy to change from one job to another and will save a lot of time. We have attachments for all kinds of tool sharpening and tool room grinding.

You had better get our literature

Greenfield Machine Company
Greenfield, Mass., U. S. A.

Arbor Presses

Any width.

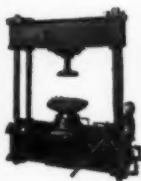
Any tons pressure.

Easiest and quickest
hand press made.



Quick Acting Power Presses

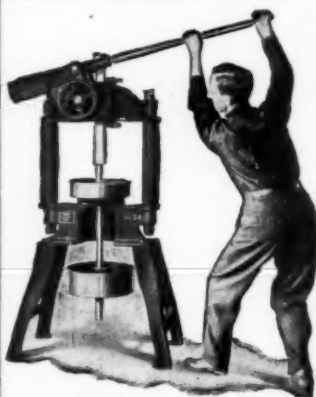
with
Automatic Regulation



Hydraulic Machinery

Any Capacity
for
Any Pressing Purpose
Write for catalog

LOURIE MFG. CO. Springfield, Illinois



No. 24 Press

Efficient Equipment Atlas Presses

for building and repairing
automobiles and
general machine shop
operations requiring
pressure up to 25 tons
and centering capacity
up to 36 inches.

For driving mandrels;
bending and straighten-
ing, broaching, emboss-
ing with dies, setting
bushings and many
other every day manu-
facturing jobs, there is an
Atlas Press. All sizes
for all purposes. *It will
pay you to investigate.*

Atlas Press Co.

317 N. Park Street,
Kalamazoo, Mich., U. S. A.

Cap.

20

Tons

Price

66⁰⁰

Net



WEAVER

Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

Net Price (32-in. Width) \$66.00

Weaver Manufacturing Co.

2179 So. 9th Street,

Springfield, Illinois



Woodruff Keyseat Cutters

We recut Woodruff Keyseat Cutters and alter each dimension necessary to make the next smaller standard size, without annealing, so the shanks will remain standard.

The Cost is 30% of the Original List Price

And We Pay Express One Way

In appearance, workmanship and cutting quality, all cutters recut by us are guaranteed to equal new ones.

Peninsular Tool Salvage Co.
Detroit, Michigan



Crane's Bench Arbor Press

For Work up to 7" Diameter

Price

\$11.78



This low-priced Arbor Press is both handy and strong. It will stand a strain of six tons. It is made by clamping a regular Two-Arm Crane Wheel Puller into a Base that bolts to the bench.

It takes solid work up to 7" in diameter; and where the work is not solid, such as wheels with spokes, the Puller may be removed and clamped on again through the open spaces, which permits taking work of that kind of any size.

A larger combination to take 11½" solid work, \$15.38

Can ship promptly; full description upon request

The Crane Puller Co.

54 Lake Street,

Arlington, Mass., U. S. A.

Since 1905

This Keyseater

Has been in daily commercial use. It is worth your time to write for catalog O and get details on this tool for your work.

National Machine Tool Company

2268 Spring Grove Ave.,

Cincinnati, Ohio



A Simple, Inexpensive Device For Removing Broken Taps



The Walton Tap Extractor

takes out a tap that is broken at or below the surface as if it were whole, without injury to the threads. There are few shops where this practical little tool will not save many times its small cost every year, in money, annoyance and delays. You should not be without it.

Write for folder—or 60 days' free trial

THE WALTON CO., Hartford, Conn.

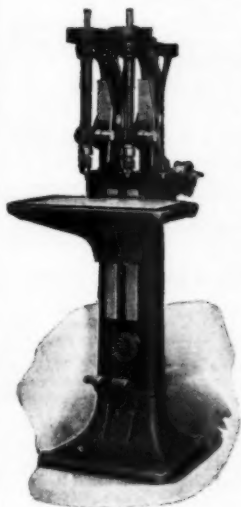
Sensitive Drilling Machines

For The

Manufacturer

Who Must Get

Big Production



Spindle Speeds
up to 10,000 R. P. M.

Bench or
Floor Type

Hand or
Foot Feed

Tapping
Attachments
If Desired.

Bulletin 502 on request

Leland-Gifford Co.
Worcester, Mass., U. S. A.





You Need The "Double-Gripp" Safety Tapping Chuck



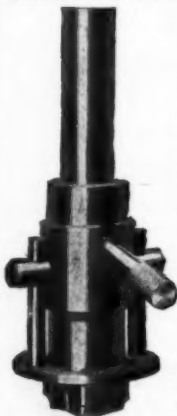
To keep your production up to top notch; and not only to **KEEP** it up, but to **INCREASE** it.

This Is The Chuck

that will reduce your tapping cost to the lowest possible figure and put it on a more profitable basis.

*Our Circular Tells How
Write for it today*

William L. Proconier
549 Washington Blvd., Chicago, U. S. A.



Murchey Chasers

When You Want Them

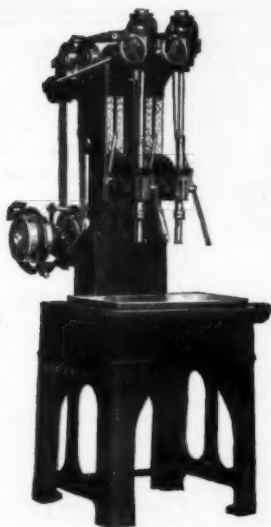
We save your time with "Murchey Service," which means prompt shipment of Chasers on receipt of order.

We save your money with Murchey Collapsing Taps and Self-Opening Dies, because of their great economies.

The perfection of Murchey Taps and Dies is due to the same capital, energy and skill that have enabled us to keep ahead of multiplying orders for Murchey Chasers.

*Come on with your orders
We'll take care of you*

Murchey Machine & Tool Co.
58 Porter St., Detroit, Mich.



With
One
to
Eight
Spindles

For
 $\frac{3}{4}$ -in.
Drills
and
Smaller

Henry & Wright Drilling Machines

Warrant Your Investigation

WHEN a number of the largest drilling plants in the country have standardized on Henry & Wrights after the most exhaustive tests, and—

WHEN we offer you a selection of 252 varieties from which to choose those that are particularly adapted to your exact requirements—

THEN don't you think that you ought at least to investigate Henry & Wrights before placing that contemplated order for drilling machines?

*Your inquiry will not obligate you in the slightest
And we want to send you our free Feed and Speed Chart*

The Henry & Wright Mfg. Co.
706 Windsor St., Hartford, Conn.

Kelly PRODUCTION Tools



for PADLARD-CAST STEEL AUTO TRUCK WHEELS

For
Cylinders,
Crank Cases,
Connecting
Rods,
Auto Parts,
Etc.



We Make
DELIVERIES
in 1 to 10 days

They
"ADJUST"
Write for the Catalog G-H.

THE KELLY REAMER CO.
CLEVELAND, OHIO, U. S. A.

C. W. Burton, Griffiths & Co., London, English Agents.
Burton Fils, Paris, French Agts. 40 Domestic Agencies.

KELLY
"Multiple"
7
Operations

Back of the Battlefield

are marshalled the machines of production, straining to speed up their output.

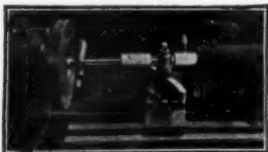
Every minute that can be saved adds to the total supplies which can be turned out. If 2 to 10 minutes could be clipped off, every time the job on a lathe is changed, from two hours to a full day would be added to the output of each lathe each week.

How many lathes have you?

W. H. Nicholson & Co.

117 Oregon Street,

Wilkes-Barre, Pa.



NICHOLSON
Expanding
Mandrel



FEATURES

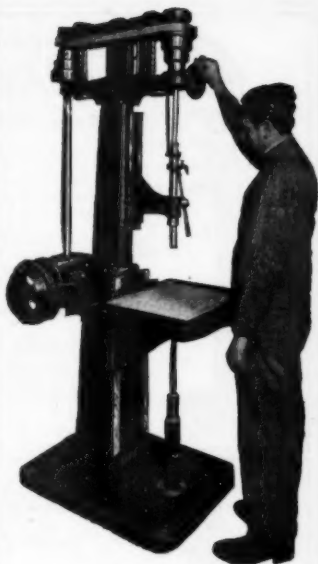
**Quick
Change Speed**
Change in 2 seconds

**Most
Efficient Drive**
No belt troubles

Safety First
All parts protected

**Heaviest
Drill Made**

All Ball Bearings



Heaviest Drill of Its Class

There is more metal, rightly placed, in

The Sipp Quick-Change-Speed Drill
than in any other similar drill. This added metal gives it unusual rigidity, which insures accurate work, prevents breakage of drills and increases output.

Write for Bulletin No. 4.

The Sipp Machine Co.

Keen St.

Paterson, N. J.



Fenn Tapping Machine for Lowest-Cost Tapping

Capacity up to 3-16 in.

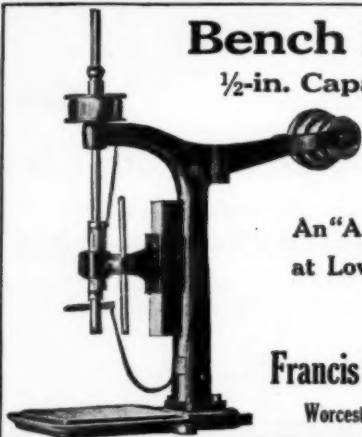
The simple construction and reasonable price of the Fenn Friction Drive Tapping Machine bring it within the reach of everyone, so there is no excuse for the expensive process of tapping by hand.

Its extreme sensitiveness to the will of the operator enables it to save time and cost at every turn, when compared with any gear-driven machine ever built.

Won't you write for the details?

Fenn Manufacturing Company
Hartford, Conn.

Cable Address "Fenn." West. Union Code
W. L. Fenn W. A. Fenn
(Formerly of the Taylor & Fenn Co.)



Bench Drill

1/2-in. Capacity

An "A-1" Tool
at Low Price.

Francis Reed Co.

Worcester, Mass.



One of the Many Styles
of

Avey
**Drilling
Machines**

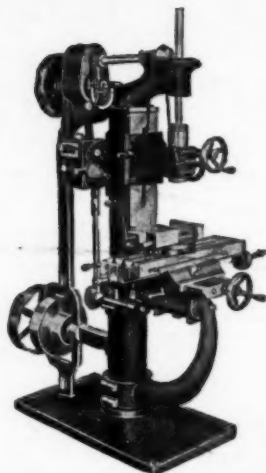
This Design Is
Well Adapted for
Tool Room Work

Avey
**Ball
Bearing
Drilling
Machines**

High Grade
for
High Speed
Work

Originators Of The Super
Sensitive Drilling Machine

The Cincinnati Pulley Mch. Co., Cincinnati



Speed Up That Hard Machining

In the Tool Room and Experimental Dept.

EVERY KNIGHT embodies the convenience of two or three ordinary machines. They mill, bore and drill at any angle, and there's no need of resetting the work. For doing the odd or unusual job quickly and accurately, they are undoubtedly in a class by themselves.

Knights are built in three sizes. The smallest weighs 600, the medium 1200, and the big one 2300 lbs. They save time and money wherever there is machine work to be done.

Anticipate your needs, if possible. The heavy demand keeps our storerooms empty.

W. B. Knight Machinery Co.
St. Louis, Mo.

Big Pieces Drilled Cheaper

Use a T. & F. for Holes Up To $\frac{3}{4}$ in.



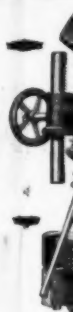
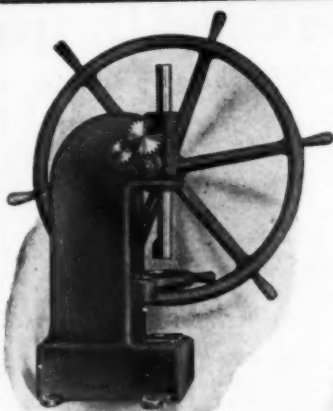
It's a More Convenient Machine

—combining the flexibility of the radial with the speed of the sensitive, and resulting in the doubling and trebling of former capacities. We shall be glad to send you production records and cost comparisons that prove our statements.

These machines have all the desirable features of our standard line, and by using drilling heads of different types they can be made to cover nearly all drilling requirements within their range. You can drill, tap and counterbore without losing time changing tools and speeds.

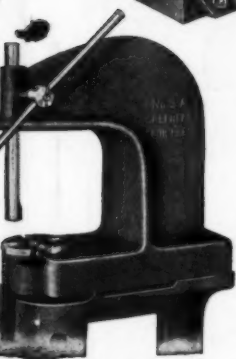
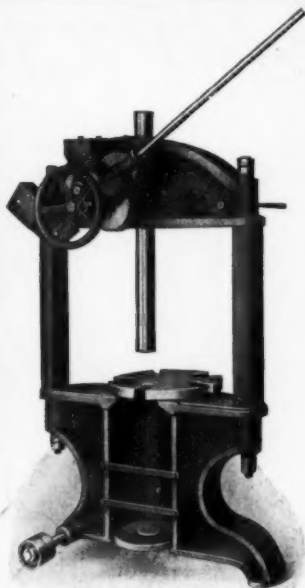
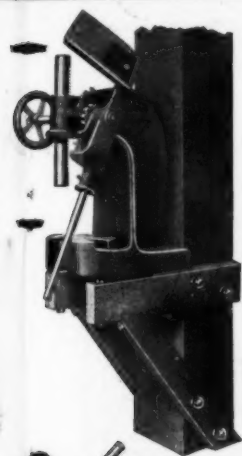
Economy demands you investigate. Write us today.

The Taylor & Fenn Company
Hartford, Conn.



Edwin E. Bartlett, N

Sold by all Dealers. We have a



tt, Nashua, N. H.
 We have a catalog for you.

JOHNSON



Bushings and Bearings

mean better service—longer wear,
prompt deliveries.

No matter whether you make your own
bushings or not we can produce some
data which will interest you.

Send blue prints and specifications for a specimen Johnson quotation.

JOHNSON BRONZE COMPANY

Bushing Specialists

FORMERLY—THE AMERICAN CAR & SHIP HDW. MFG. CO.
WORKS AND GENERAL OFFICES
NEW CASTLE, PA.

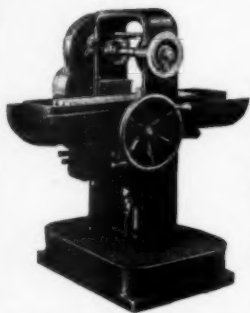
SALES OFFICES: Buffalo, Cleveland, Detroit, Cincinnati, Chicago, New York



BROWN & SHARPE CUTTERS

The cumulative result of fifty years' experience in the extensive use as well as the extensive manufacture of milling cutters. Standard Cutters in 45 styles and over 5000 sizes. Special and formed cutters, singly and in gangs to order. Send for Catalog 27.

Accurate Low-Cost Milling



Wider and Heavier Cuts—No Chatter

The Briggs High Duty Milling Machine was designed on original lines by a manufacturing engineer. It is saving money today on all kinds of form and gang milling, including steel parts for autos and guns.

It takes the full power of a 3½-inch double belt without any tendency to chatter.

You will be glad to know all the good points of the Briggs

GOOLEY & EDLUND, Inc., Cortland, N. Y.



This is our No. 1 Bench Miller

This Machine has been a wonderful success on ammunition work.

Ask for Catalogue of Complete Line

The Burke Machine Tool Company
Conneaut, Ohio

"Whitney" Hand Miller

THOUSANDS IN USE



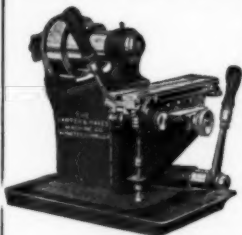
The Milling Machine with the SLIDING HEAD. No other design equals it for speed, accuracy, economy, and convenience. Useful every day in the year on countless operations.

Prompt Deliveries

The Whitney Mfg. Co., - Hartford, Conn.

Chains—Keys—Hand Milling Machines

This Bench Miller



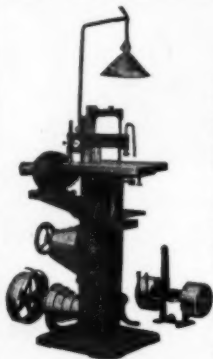
Is well designed and well built and is a machine that will give you good and permanent service. Can furnish floor column if required.

Send for circular

The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

The Rearwin Die Filing Machine



**Has 480 Pounds of
Efficiency, as follows:**

Table 17"x18", 39 inches from floor, supported on a yoke, and tilts seven degrees four ways.

Has two arms, adjustable.

Uses files and hack saws 3" to 12" in length.

Adjustable stroke, $\frac{1}{2}$ " to 7".

Is driven with 2" belt over a 12" friction pulley.

Speed is varied with two cone pulleys, four steps, 4" to 8".

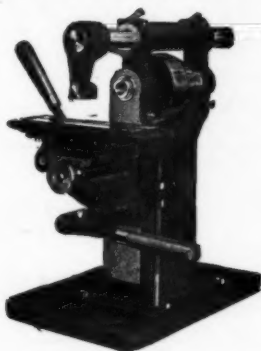
Circular is yours for the asking

W. D. Rearwin

341 Mill Av., N. W., Grand Rapids, Mich.

"BURKE"

No. 3 Milling Machine



Longitudinal feed of table	6 inches
Traverse feed.....	3¼ inches
Vertical motion to knee.....	8¾ inches
Maximum distance between center of spindle and table	7 inches
Working surface of table.....	3½x12 inches
Greatest distance between centers (6-inch swing).....	2¾ inches
Largest diameter of cone.....	6 inches
Smallest diameter of cone.....	3½ inches
Driving belt.....	2 inches
Taper hole in spindle.....	B. and S. No. 9
Hole in spindle.....	½ inch
Height over all.....	25½ inches
Loose pulley on countershaft.....	7x2¼ inches
Speed of countershaft.....	280 revolutions
Weight complete.....	235 pounds
Weight boxed.....	300 pounds

Ask for Catalogue of Complete Line

The Burke Machine Tool Co.
Conneaut, Ohio, U. S. A.



"Wear-Ever" Tap Chuck

The Handiest Thing Out

A low-priced, one-piece tap chuck, out-lasting several friction chucks, which provides a positive drive for taps of all sizes, at a saving of both time and taps.

It is simple. It has no screws to adjust. No time is lost in setting it for various taps. It drives the tap true regardless of variation in shanks.

*Used once, used always
Write for description and price*

Scully-Jones & Co.

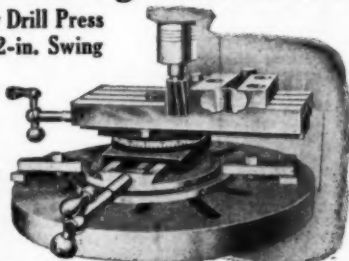
Room 555 Railway Exchange Bldg.,

CHICAGO

Davis Milling Attachment

**For Any Drill Press
14 to 42-in. Swing**

**Big
Economy
Big
Convenience
Small
Price**



Relieves your large millers, comes in handy spotting castings, milling ends of bosses, and many other odd jobs. Does 99% of the lighter jobs as well as a \$1,000 machine. The prices on our cylinder reamers for reboring the Ford car, and our reliable air compressor, are also surprisingly low. Circulars, etc., sent on request.

Hinckley Machine Works, HINCKLEY, ILL.

ILLINOIS TOOLS



IT will be to your advantage to confer with our engineering department, no matter what are your Hob and Cutter requirements.

Standard tools in stock.
Prompt delivery on specials.

*Write or Wire
for Quotations*

ILLINOIS TOOL WORKS
CHICAGO, U.S.A.



A Wonderful Combination In Riveting



- Speed:** one rivet per second.
- Uniformity:** each rivet headed with same degree of tightness or looseness as desired.
- Finish:** perfectly formed rivet heads, highly polished surface, no hammer or tool marks shown.

GRANT Noiseless Rivet Spinning Machines, are the only machines built that will accomplish the above.

Catalog ?

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Universal Ball Joints

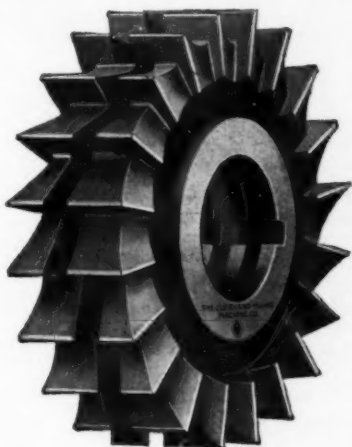
Run perfectly to an angle of 70 degrees. Made in sizes $\frac{3}{4}$ " , 1" , $1\frac{1}{4}$ " , $1\frac{1}{2}$ " , $1\frac{3}{4}$ " & 2". Special sizes on order.



They are strong, durable and thoroughly reliable. They are made of the best materials, with hardened balls, are carefully fitted and tested, and they run accurately without play or looseness in any direction. The thousands in satisfactory use on all kinds of machines is a sufficient guaranty of their excellence. We also make the "Giant" Universal Joint for heavy shafting.

Tell us your needs in angular drives; we'll take care of you

Ainslie Machine & Tool Works
Hartford, Conn.



Milling Cutters

Of Every Description

Formed Cutters a specialty.
Standard Milling Cutters
carried in stock.

Cleveland Milling Machine Co.
Cleveland, Ohio

ELECTRIC EUCLID HOISTS

Little Things

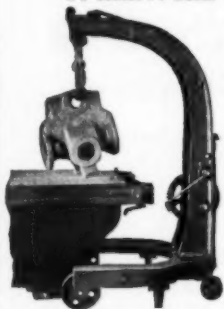
Mechanical perfection is attained through the perfecting of details, or what some call "little things."

Euclid engineers have given special attention to the development of these little things and so built up a hoist that has won the confidence of the best engineers and manufacturers in the country.

Our catalog fully describes these perfected features. We will mail it to you upon request.

The Euclid Crane & Hoist Co.
Dept. C EUCLID, OHIO, U. S. A.

It's Patriotic and Profitable To Relieve Men With Canton Cranes



In these days of war-enforced economy, a Crane that enables you to dispense with the lifting and lugging of 6 to 10 men, becomes a factor no one can afford to ignore.

Cantons handle machinery, castings, etc., in perfect safety. Your choice of many sizes. Booklet E-8 tells you all about them.

Don't delay—write today

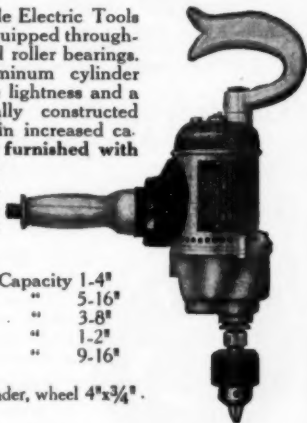
CANTON FOUNDRY & MCH. CO., Canton, O.

Thor

Universal Electric Drills

Licensed Under Burke Universal Motor Patent

The only Portable Electric Tools made that are equipped throughout with ball and roller bearings. Made with aluminum cylinder insuring extreme lightness and a powerful specially constructed motor resulting in increased capacity. Can be furnished with Universal, Alternating or Direct current motor 110 or 220 volts.



000	Drilling Capacity	1-4"
00	"	" 5-16"
0	"	" 3-8"
01	"	" 1-2"
1	"	" 9-16"

No. 6 Electric Grinder, wheel 4"x3/4".

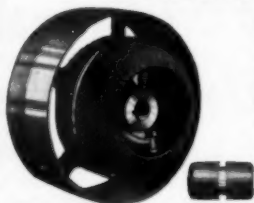
Shipped On Trial

Independent Pneumatic Tool Company

Chicago New York Pittsburgh Detroit
San Francisco Birmingham Montreal

Edgemont Friction Clutches

Of Proven Efficiency



Enclosed Type, Plain Oiling

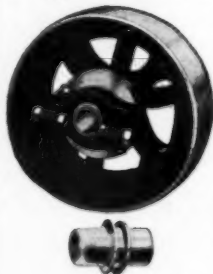
The real test of a mechanical device is long usage under every possible condition.

Edgemont Friction Clutch Pulleys have been used satisfactorily for years by the leading machine tool builders of the country—names on request. There could be no harder test; they can find no better clutches.

Write for complete catalog and names of users

The Edgemont Machine Co.
Dayton, Ohio

Dependable Friction Clutches



High Power

The large diameter of friction disc permits a full uniform grip around the pulley, insuring ample power and dependability under high speeds.

Wearing Qualities

They are simple, strong and compact, with nothing to cause trouble or require repairs. Just oil them every second month, without throwing off the belt and they will give perfect service.

You are invited to investigate these "better clutches"

PASSMAN BROS., 30 S. Green Street
CHICAGO, ILL.



"Van Dorn" ELECTRIC TOOLS

Portable Electric Drills and Grinders

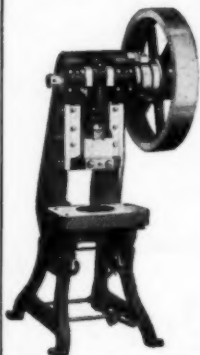
The product generally recognized as combining careful workmanship and highest grade material to insure maximum efficiency.

Write Dept. HMT for Catalogs

The *Van Dorn* Electric Tool Co.
Cleveland, O.

SALES OFFICES: New York, 30 Church St.; Boston, 170 Purchase St.; Chicago, 601 Monadnock Bldg.; Pittsburgh, 701 Empire Bldg.; Cincinnati, 1102 Second Nat'l Bank Bldg.; Atlanta, 1018 Healy Bldg.; Milwaukee, 529-30 Wells Bldg.; El Paso, 324 Mills Bldg.; St. Paul, 1005 Germania Life Bldg.; Denver, 1633 Tremont St.; San Francisco, 66 Eighth St.; Los Angeles, 1016 Wright & Colander Bldg.; Salt Lake City, 811 Walker Bank Bldg.

Here Is A Press



With Plenty of Steam
Back of THE PUNCH

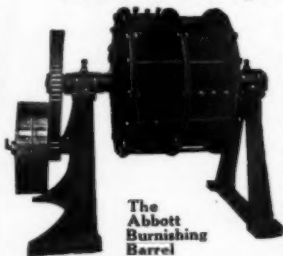
HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and
inclinable types. Their great
power backed by rigid design
enable them to do the work
you demand and stand up to it.

Write For Catalog

Rockford Iron Works
Rockford, Ill.

Burnish By The Thousands At a Few Cents per Thousand



The
Abbott
Burnishing
Barrel

There is little expense to
the operation of the Abbott
Burnishing Barrel beyond
the first cost, which is very
reasonable.

A little power, a little
soap, and the time of loading
and unloading—these cover
the cost of burnishing a bar-
relful of small metal parts.

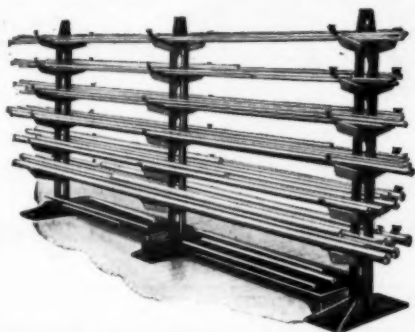
The peculiar shape of the
barrel, in combination with
the Abbott Carbonized Steel
Balls, produce a brilliant,
uniform finish, without bend-
ing, marring or breaking.

Write for Booklet and send samples for burnishing

The Abbott Ball Company
Elmwood District, Hartford, Conn.

Seven Tons

Of 18-Foot Steel Rods and Bars
Carried on This Rack Without Overloading



"New Britain" Bar Stock Rack

This Rack is designed for the convenient storage of rods and bars in small space, where they may be easily loaded or unloaded without end-hauling, with a sufficient number of hooks to prevent an undue mixing of sizes.

It is made in two styles, the single-hook or wall pattern, and the double-hook type as shown above, also with two, three or four posts. Built on the unit idea, it can be expanded or contracted as desired.

It cannot be overloaded, and the ample width of base renders it stable under any weight. The graduation in the length of hooks—long at the bottom and short at the top—enables stock to be lifted or hoisted vertically.

This convenient Rack is well worth its cost in the saving of space; it is worth many times its cost in the saving of time, for years and years to come, with no expense for up-keep.

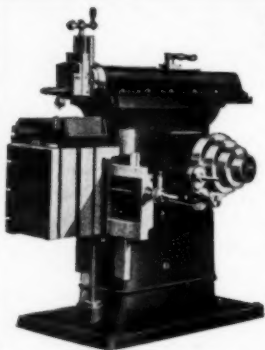
Our free Bulletin No. 1219 explains fully

The New Britain Machine Company

**"Shop Furniture
Originators"**



**New Britain,
Conn. U.S.A.**



Shapers

The best medium priced Shaper on the market.

Built in 16", 18", and 24" sizes, all back geared crank machines.

A few for early delivery.

The Osborne & Sexton Mchy. Co.
Columbus, Ohio

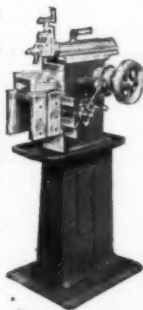
Economical Shaping & Slotting On Rhodes 7" Machines

While Small in Size it is BIG in capacity, efficiency and economy, and it has no equal in keeping costs down on light work such as dies, tools, models, etc., etc.

We build them vertical, horizontal, and a combination of the two, and they have all the essential elements of the larger and more expensive machines.

If you can use one you can also save money with one of these modern, accurate tools

Rhodes Mfg. Co.
Hartford, Conn.



Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4; per year, \$40.

**Gauges, Jigs
Dies, Tools
and Light
Machinery**

Model Tool & Gauge Co.

185 John St., Bridgeport, Conn.

Quick deliveries on gauges, jigs, dies and tools. Light machinery built on contract. Send us your specifications. We shall be pleased to quote.

**Screw Machine
Products
Tools and
Special
Machinery**

Spafford Tool Works

10 Hadley Place, Hartford, Conn.

We make the tools for a big fire-arms plant. Why not for you? Also well equipped to do screw machine work in quantities and to manufacture special machinery.

**Gray Iron
and Semi-Steel
Castings**

The Smith & Winchester Mfg. Co.

South Windham, Conn.

Let us estimate on your requirements. We have skilled men and first-class shipping facilities.

**Dies, Tool
General
Machine Work**

Chicago Die & Machine Works

415 N. Carpenter St., Chicago, Ill.

We are equipped to render satisfactory service on all kinds of general machine work. No job too big or too difficult. Established 1876.

**Sheet Metal
Stamping
Dies and Tools**

Walter L. Schultz

29 So. Clinton St., Chicago, Ill.

We solicit your inquiry for sheet metal stamping. Manufacturing a specialty.

**Press, Forge
and
Upset Work**

Dowling Iron and Steel Company Boston, Mass.

Wanted contract work on light and heavy stamping, forming and punching. Also finishing on milling machines, shapers, and lathes. Also upsetting, threading and light forgings. † Send us your sketches or samples.

**Dies
Tools
Special
Machinery**

Robbins, Gamwell & Co.

Pittsfield, Mass.

Accuracy and efficiency in gages, dies and special machinery, is our specialty.

CONTRACT WORK WANTED

<p>Sheet Metal Stamping</p>	<p>Frank B. Lothrop Co. South Acton, Mass. Blanking, Bending, Deep Drawing, Nickel Plating.</p>
<p>Dies, Tools Screw Machine Work and Special Machinery</p>	<p>American Voting Machine Co. Waltham, Mass. We offer for immediate service a portion of our factory facilities, especially adapted for die and tool work, automatic screw machine work and general manufacturing, together with experienced men. We also design and build special machinery and tools.</p>
<p>Castings Machine Work Oxy-Acetylene Welding</p>	<p>Bemidji Iron Works Company, Inc. Bemidji, Minn. We are in position to handle contract work in grey iron castings, brass castings, machine work, and Oxy-Acetylene welding. Let us figure on your requirements.</p>
<p>Sheet Metal Stamping and Manufacturing</p>	<p>Batavia Specialty Co. Batavia, N. Y. We solicit your inquiries for light sheet metal stamping and manufacturing of specialties.</p>
<p>Gray and Malleable Iron Castings Die Castings</p>	<p>Lough Brothers 90 West Street, New York City Gray iron castings, one ounce to twenty tons. Malleable iron castings. Die castings in aluminum, tin and zinc alloys.</p>
<p>Dies, Gauges Jigs and Fixtures</p>	<p>A. N. Van Deman 95 William St., New York City Model and experimental work; special machinery built to order; contract manufacturing. Finished parts, of intricate shapes, accurately produced from electrolytic copper</p>
<p>Tools, Dies Jigs General Machine Work</p>	<p>Commercial Motor Car Co., Inc. Owego, Tioga County, N. Y. Screw machine products. Efficient service and prompt deliveries. Send us your blueprints for quotations.</p>
<p>Is Your Equipment All Busy?</p>	<p>Why not get in some special work to fill in the idle time? Let the manufacturing public know what you can do, and what machinery you have to do it with. Space in this department costs but little, and covers the metal manufacturing field as with a blanket. Why not try it?</p>

CONTRACT WORK WANTED

Machine Work	The Knight Manufacturing Co. 1510 Market Ave., S., Canton, Ohio Lathe, planer, milling machine, gear cutting and drill press work, on contract or hourly basis. Mail us your blue prints for estimates.
Dies, Tools, Jigs, Gauges Model and Experimental Work	The Ideal Machine & Tool Co. 130-132 Opera Place, Cincinnati, Ohio We design and construct tools and machines for special purposes and manufacture metal specialties in quantities to order. We also make a specialty of developing and perfecting inventions. No charge for estimates. Write us today.
Light, General Machine Work Punch Press and Screw Machine Work	The Apex Electrical Mfg. Co. Cleveland, Ohio We offer for immediate service a portion of our factory facilities, especially adapted for die work, hand and automatic screw machine work, polishing, buffing and assembling, together with men experienced in light electrical construction.
Want Orders for Die Casting?	This is the place where you can offer your facilities to users of metal products everywhere in the United States. Many readers of the Tool List are in the market for die castings, and they would welcome information as to what you can do for them.
Screw Machine Products	The Homer Commutator Co. 4748 Hough Ave., Cleveland, Ohio We can give entire production of three four-spindle No. 55 National Acme machines for an unlimited time. The capacity of machines is 1 1/2".
Screw Machine Products	Litquick Gas Lamp Co. Defiance, Ohio
Drop Forgings (All Kinds)	Bonney Vise & Tool Works, Inc. Allentown, Pa. Quick and Accurate Drop Forging and Finishing Good tools, good men, and good management insure precision and promptness. Investigate; when you know our facilities and our record you'll want our service.
Work for Your Idle Equipment	You can get it, if you will let manufacturers know just what you can do. Tell them through this department. The cost is small; the distribution covers the metal manufacturing people everywhere in the United States.

CONTRACT WORK WANTED

<p>Light Stamping Drawing Piercing Etc.</p>	<p style="text-align: center;">Automatic Department THE METAL PRODUCTS CORPORATION Providence, R. I.</p> <p>Equipped for stamping, drawing, piercing, bending, assembling and finishing in any of the electroplated finishes. We do light work only, but for this have unusual facilities for rapid production at low cost. Get our price.</p>
<p>Pressed and Stamped Steel Parts</p>	<p style="text-align: center;">Geuder, Paeschke & Frey Co. 1325-1700 St. Paul Av., Milwaukee, Wis.</p> <p>It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81." Send samples or blue prints for est.</p>
<p>General Machine Work Brass Founders</p>	<p style="text-align: center;">Gray's Engineering Works 3202-8 Market St., Galveston, Texas</p> <p>We have ample facilities for all classes of machine work, with good men and up-to-date machines. Would like to hear from good concerns having castings or forgings to machine. Have trackage.</p>
<p>Do You Want Work On Contract?</p>	<p>If you want contract work, state in one of these spaces what you are prepared to do, and it will go into more manufacturing plants than if published in every mechanical journal in the country.</p>

Want More Orders?

They are to be had for special contract work in machining, stamping, forging, casting, welding or any department of machine manufacturing. The problem is merely to bring the capacity and the demand for it together. If you have the idle capacity, and want work for it, the "Contract Work Wanted" department of the Tool List will help you to get in touch with machine-making plants everywhere in the United States. Its circulation among American metal working plants is country-wide. There is no other available means by which you can reach so many.

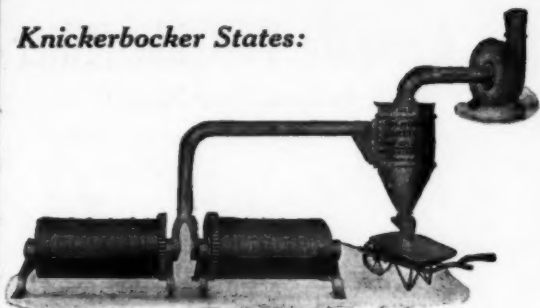
Don't let your equipment stand idle. That costs money—a lot more than it will cost you to find work for it. Write me for further information, and for a copy suggestion, which I shall be glad to make without cost or obligation.

A. H. Hitchcock, Publisher

Hitchcock's Machine Tool List

1220-1235 Caxton Building, Chicago, Ill.

Knickerbocker States:



One Firm Now Uses 18 Morse Dust Collectors



"'Nothing succeeds like success' is a truism emphasized by the repeat orders we receive right along from big firms in all parts of the country.

"The number of Collectors these firms use run 4, 5, 7, 9, etc., up to as many as 18 in one big plant. Service, efficient and economical service, has made the Morse Collector so deservedly popular.

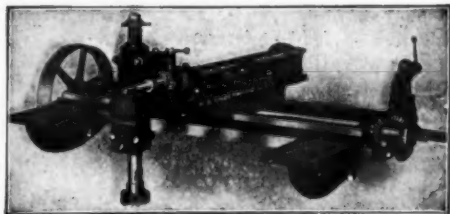
"The Morse operates on the "rarefied" or partial vacuum principle. Hence there is no abrasion of fan parts, and very little wear from internal friction. It has the endorsement of expert engineers."

Let us send you our instructive Booklet

The Knickerbocker Company
Jackson, Mich.

An Accurate Portable Miller

Built to Suit Your Needs



THIS HANDY TOOL is both rapid and accurate, and enables you to save time on many jobs, as it accomplishes a wide range of repairing in place. It has power feed in both directions, and is usable in any position—horizontal, vertical or inclined.

The Underwood Miller is operated by hand, small steam engine, air or electric motor. It faces a valve seat 22x40x7 in., or does other milling of similar scope. Railway and general repair shops find it saves as much as 50% of time on many jobs. Our line of Portable Tools affords you a choice of:

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; armature and axle bearing borers; pipe benders; locomotive cylinder borers; boring bar for lathe work; crank pin turners; reflex water glass grinders; rail saws; motors, etc.

We've been making 'em for nearly 50 years—send for our Catalog

H. B. Underwood & Company

1016-22 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **40 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

FOR SALE BY

Western Mchy. Co., —C. H. Norton— 12 W. 3rd St., Cincinnati, O.

Air compressor, 8"x8"x8" C.P.T.Co.
Chuckling mche., vertical, 26" Gray.
Grinders, cutter and reamer, No. 1 Cincinnati, (2).
Lathe, 13"x 6' P. & W.
Lathe, 14"x 5' Reed.
Lathe, 14"x 6' Shepard.
Lathe, 20"x10' P. & W.
Lathe, 20"x12' Gray, c. r.

Miller, universal, Cincinnati, about equal to No. 2.
Planer, 36"x12', 1 head, \$650.
Radial drill, 3', old style.
Radial drill, 3' Morris, cone drive.
Shaper, 20" Hendey, geared.
Trench pump, power driven.
Turret lathes, 12", with chucks, (6).

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio.

LATHES AND TURRET LATHES.

Precision bench, Rivett.
9" to 13" Barnes, comp. rest new.
13-15-16 and 18 O. & S., h.s., c.r., new.
14"x 6' Hamilton, h. s., comp. rest.
14"x 6' Bradford, power feed turret.
15"x 6' Fox universal lathe.
16"x 6' Greaves & K., h. s., c. r., (2).
18"x 6' Mueller, turret on shears.

18"x8' Hamilton, dbl. bk. gr., new.
21"x14' Fifield, compound rest.
22"x 8' Schumacher & B., h. s., c. r.
22"x10' Hamilton, dbl. bk. gr., new.
54"x18' Pond, old style.
1" Garvin hand screw machine.
1 1/2" hand screw machine, Wood.
3"x24" J. & L., bar equipment.

SHAPERS AND PLANERS.

16" Steptoe, bk. grd. crank.
16, 18 & 24 Barker, crank, new.
22" Walcott power down feed.

20"x20"x 4' Industrial.
24"x24"x6. Sellers.
36"x36"x14' Sellers.

HAMMERS.

1,200 lb., steam, single leg.
300 Bliss, friction board drop.
150 Bliss, drop.
40 & 60 lb. Bradley, helve.

50 lb. Bradley, compact.
55 lb. Williams & White.
50 lb. Wilcox, upright.
25 lb. Schatz, helve.

PRESSES.

Perkins, dbl. housing, 16x24.
3 1/2 Bliss, 8000 lbs.
355 Bliss, toggle drawing, 42,000 lbs.

Hydraulic, 37" bet. uprights.
500-ton hydraulic, with pump.
Foot, 16"x24" Niagara.

DRILLS AND RADIALS.

Flexible shaft, 1" hole, (2).
Sensitive 1, 2 & 3 spindle.
Sliding head 24", 26" and 28".

Quint 6-hole turret.
5' universal radial.
3' Bickford plain radial.

GRINDERS AND MILLERS.

Tool, Gleason and Wilmarth & M.
Disc, 20" double, with press.
Surface, No. 1 Wilmarth & Morman.
Landis 10"x20" universal.

Landis, 12"x32" plain.
No. 1 1/2 Valley City, plain, new.
Cincinnati plain, 24"x7"x10".
Garvin, hand and power, 15" travel.

MISCELLANEOUS.

Borer, 42" car wheel, with hoist.
Band saws, metal, 30" Wright, (2).
Cut-off machine, 3" Davis.
Gear cutter, B. & S. No. 13.
Keyseater, Baker Bros. 1 1/2" keyways.
Motors, 1 to 50 h. p., 220 v., 3 phase.

Pipe machines, 2" & 4" Oster.
Punch & shear, No. 6 L. & A., 1/2".
Punch & shear, 2"x1 1/2", 12" throat.
Riveter, 1/2" Shuster, 20" throat.
Squaring shear, 30 & 36", 20 gauge.
Tapper, Garvin and P. & W.

SECOND-HAND MACHINERY

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago.

NEW MACHINES.

Drill presses, 20" Lindgren, all geared, power feed.
Drills, sensitive, 2, 3 and 4-spindle style "A" Barr.
Engine lathe, 14"x6" Carroll-Jamieson.
Engine lathes, 16"x6" Canedy-Otto.
Engine lathes, 18"x8" Mueller.
Grinders, drill, LaSalle and Eames.
Grinder, cutter and reamer, Greenfield and Acme.
Grinders, No. 1 La Salle, plain and surface, (3).
Milling machines, No. 14 Valley City universal and plain.
Shapers, 15", 16", 20" and 24" Kelly.
Shapers, 17" and 21" Averbek.

SECOND-HAND MACHINES.

SCREW MACHINES.

1" LaVigne.	1" Cleveland, friction jigger feed.
7-16" Cleveland, friction feed.	1 1/2" LaVigne, (2).
6" Cleveland, friction feed.	2" Hartford.
6-8" Cleveland, jigger feed.	2 1/2" Hartford.
8" Cleveland, friction feed.	6" Cleveland, semi-automatic.
4" Hartford, (3).	No. 2 Hercules, hard, new.

DRILL PRESSES.

28" Bickford, sliding head.	2-spd. Rockford L. & D. Co.
30" Kerkhoff, sliding head.	3-spd. American.
32" Bickford, sliding head.	8 spd. Valley City mult., No. 1 taper.
Single spd. H. & W. high speed.	12 spd. Baush multiple, No. 2 taper.

ENGINE LATHES.

10"x34" Davis.	28"x10' Fifeild.
14"x 6' Monarch.	28"x25' Putnam.
16"x12' Beaman & Smith.	30"x14' Blaisdell.
24"x10' Putnam.	32"x14' Pond.

PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 4 Max Ams, o. b. i.	No. 36 Consolidated, arch, 7" stroke.
No. 33 Crosby, open back.	No. 18 Bliss horn press.
No. 4 McDonald, open back.	No. 21-H horn presses.
No. 29 Bliss, gang, dbl. action.	No. 4 Long & Allstatter, s. e., 8" tr.
No. 100 Crosby, 30" bet. uprights.	19" throat geared punch.

GRINDING MACHINES.

18" Ransom, disc.	2" No. 7 Sterling, floor.
Yankee Style "B", drill.	2" Springfield, double wheel, floor.
1 1/2" Norton, floor, (2).	Springfield, dbl. wheel, water.
1 1/2" Bridgeport.	No. 2 Leland & F. water.

MISCELLANEOUS.

Boring mch., car wheel No. 55 Industrial.	Oil gas generator, No. 3 American.
Bolt cutter, 1 1/2" Acme, sgl. hd.	Planer 35"x35"x12" Niles, 2 heads.
Die filing machine, Simplex.	Riveter, 3" and 5" Shuster.
Gas engine, 35 h. p. Columbus.	Saw, band, Williamson, tilting.
Hammers, 40 and 60 lb. Bradley.	Saw, cold, Bryant, 19 1/2" dia. saw.
Hammer, 500 lb. Sandage, lift.	Saw, cold, No. 54 Nutter-Barnes.
Hobbing mchs., No. 1 Farwell, (2).	Saw sharpeners, Nutter-Barnes, (2).
Keyseater, No. 00 Baker.	Shear, slitting, No. 380 Toledo, 16 ga.
Keyseater, 36" Morton portable.	Shear, No. 236 Niagara, sq., 14 ga.
Miller, slab, 22"x5', Eynon-Ingersoll.	Time clock, No. 14 Cincinnati.

SECOND-HAND MACHINERY.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

- | | |
|---|---|
| 20"x6' New Haven, comp. rest. | 18"x10' Flather, c. r., t. a., q. c. r. |
| 18"x10' Flather, c. r., taper att. | 18"x8' LeBlond, compound rest. |
| 22"x8' Flather, c. r., standard. | 24" raised to swing 32"x12' bed, |
| 26"x16' Bridgeford, patent head. | LeBlond, compound rest. |
| 8" Hardinge Bros. precision lathe. | 12"x5' F. E. Reed, r. & f. r. |
| 18"x6' Whitcomb Blaisdell, c. r. | 16"x8' American, c. r., t. att. |
| 18"x8' Whitcomb Blaisdell, c. r. | 16"x6' Lodge & Shipley, comp. rest. |
| 16"x8' Perkins, p. r. | 24"x10' Schumacher & Boye, q. c. |
| 14"x8' Prentice Bros., c. r., standard. | |

TURRET LATHES.

- | | |
|--|--|
| 18" Lodge & Davis, gear feed head,
automatic chuck. | No. 1 Warner & S. hol. hex. turret. |
| 14" Lodge & Davis, plain head. | 24" Davis turret boring & chucking
lathe, with vert. forming att. |
| 21" Gisholt, belt driven, t. a. | |

DRILLING MACHINES.

- | | |
|--|--|
| 14" Knight Drilling & Milling, cir-
cular milling attachment. | 60" Alfred Box plain radial. |
| 12" Rockford upright. | No. 175-5' arm Cincinnati-Bickford
wall type plain radial. |
| 26" Prentice Bros. standard sl. hd. | 14" Taylor & F. upright sensitive. |
| 22" sliding head, w. & l. feed. | 3" American hi-spd. sensitive radial. |
| 28" sliding head, b. g. | 2" Gang plain radial, universal table,
cone drive, tapping att., (2). |
| 10-sp. Quint turret drill. | Beaman & Smith double spindle
horizontal boring. |
| 5-sp. Detroit, semi-automatic. | |
| 6-sp. Woodward & Rogers, sensitive. | |
| 4-sp. Garvin, sensitive. | |

SCREW MACHINES.

- | | |
|-------------------------------------|----------------------------------|
| 2" Cleveland full automatic. | 1" Hartford full automatic. |
| No. 1 Bardons & Oliver pl. hd. tur. | 2" Hartford full automatic. |
| No. 00 Brown & Sharpe automatic. | 2"x24" Jones & Lamson, gd. head. |

MILLING MACHINES.

Special horiz. slab miller, 66"x45" movable heads.

PLANERS.

- | | |
|-------------------------------|------------------------|
| 22"x22"x 5' Gray, one head. | 27"x24"x 7' New Haven. |
| 22"x24"x 5' Putnam, one head. | |

GRINDERS.

- | | |
|---------------------------------|--|
| Norton 10"x50", plain cylinder. | Type "DE" Hisey-Wolf internal. |
| Gisholt tool grinder. | Greenfield univ. cutter & reamer, (2). |
| Warner & Swasey cock grinder. | Wells bench cutter and reamer. |
| 20" Whitney wet grinder. | No. 60 Heald cylinder grinder. |

HAMMERS.

- | | |
|--|---|
| Coffman, post, power dr., 25 lbs., c. s. | No. 2-A high spd. riveting, c. s., (3). |
| 100 lb. Cady, belt drop., c. s. | 400 lb.-4 poppet Etna Machine. Co. |
| 25 lb. Bradley, upright helve. | rope drop hammer. |

RIVETERS.

- | | |
|--|---|
| 1" Shuster, elastic rotary blow. | 1/16" Adt, elastic rotary blow. |
| No. 81-A Grant bench type rivet
spinning machine. | 11 1/2" throat Giant rivet spinning
machine. |

GEAR CUTTERS.

- | | |
|---|--|
| Dwight Slate auto. pinion cutter. | No. 4, 12" Lees Bradner auto. gr. hob. |
| Schuchardt & S. LeJeune auto. gear
tooth rounding. | Brown & Sharpe spur gear testing
machine. |

MISCELLANEOUS.

- | | |
|--|--------------------------------------|
| Bolt cutter, 14" Landis, single. | Keyseater, Morton, draw stroke. |
| Bolt cutters, 1" Wells, h. & p., solid
sp., and 1 1/2" Wells, solid die, sgl. | Keyseater, Mitts & M. sq. frame. |
| Broacher, No. 3 Lapointe. | Keyseater, Mitts & M. No. 3 Giant. |
| Flywheel presses, Waterbury, o. b. pl. | Keyseater and slotter, No. 0. Baker. |
| | Thread miller, 6"x18" Cleveland. |

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.

LATHES.

13" x 6' South Bend, h. s., compound rest, new	\$ 267.50
15" x 8' South Bend, h. s., compound rest, new	360.00
16" x 8' South Bend, h. s., compound rest, new	430.00
18" x 10' South Bend, h. s., compound rest, new	570.00
17" x 8' Sidney, double back geared, quick change gear, hollow spdl., compound rest, new	990.00
19" x 10' Sidney, double back gear, quick change gear, hollow spdl. and compound rest, new	1090.00
14" x 8' American, q. c. g., h. s., compound rest	575.00
18" x 8' Reed, s. s., p. r.	275.00
17" x 8' Fifield, hollow spindle, plain rest	275.00
20" x 8' Oakley, d. b. g., h. s., comp. rest, not screw cutting, (4), each	600.00
36" x 16' New Haven, s. s., compound rest	1000.00
38" x 14' Fitchburg, s. s., compound rest	1500.00
12" Warner & Swasey speed lathe and chuck	50.00

DRILLING MACHINES.

No. 1 Burke, bench, sensitive, $\frac{3}{4}$ " cap., with chuck; new (3), each	\$ 17.50
No. 28 Western Chief, bench, sensitive, $\frac{1}{2}$ " cap.; new (2), each	25.00
14" Excelsior, sensitive, $\frac{1}{2}$ " cap.	57.50
20" Barnes, square base, w. & l.	65.00
20" Champion, sq. b., lever feed; new (3), each	100.00
20" Champion, sq. b., wheel and lever feed; new (3), each	110.00
20" Silver, square base, b. g., p. f., new	135.00
26" Aurora, sliding head, back geared and p. g. f.; new	325.00
24" Bickford, sliding head, wheel and lever feed	100.00

SHEARS.

No. 11-A Badger, alligator, cap. $\frac{1}{2}$ x 3	\$ 65.00
No. 15-A Niagara ring and circle shear, head only	75.00

SAWS.

Bryant No. 10, Q. & C. cold saw, 20" saw	\$ 150.00
No. 2 Atkins Kwick-Kut hack saw	25.00
No. 1 Hoefler hack saw	15.00

BRAKES.

4' Dreis & Krump, cap. 16 ga.; new	\$ 70.00
8' Dreis & Krump, cap. 18 ga.; new	117.50
6' Robinson, cap. 20 ga.; (2), each	100.00
8' Robinson cornice brake	155.00
8' Robinson, heavy type, power	300.00

COMPRESSORS.

6x6x6 Laidlaw-Dunn-Gordon, steam; cap. 30 cu. ft.	\$ 125.00
10x10 Star, vertical, with engine, double acting; cap. 120 cu. ft.	450.00
20" x 20x13x24 Norwalk, cap. 960 cu. ft.	1000.00

MISCELLANEOUS.

Air hoist and trolley, 12x48, vertical	\$ 60.00
Blower, No. 2 Root rotary, with engine	250.00
Blower, No. 9 Sturtevant	90.00
Blower, pressure, No. 7 Sturtevant on base	75.00
Blower, volume, No. 9-B Buffalo	75.00
Bolt cutter, Acme 1 $\frac{1}{2}$ " double head	300.00
Boring mill, 36" single head	350.00
Buffing lathe, No. 5 Blount, and c. s., new	30.00
Grindstone frame, iron, for 36x6 stone	25.00
Hammer, helve, 60 lb. Knowlton	250.00
Milling machine, No. 6 Whitney, hand	175.00
Pipe machine, Borden, belted; cap. 2"	175.00
Planer, 29"x25"x7' High H., F. & M. Co., solid head	550.00
Shaper, 15" crank, with vise	275.00
Shaper, 28" Smith & Mills	700.00
Tire setter and pump, 60" Hercules	600.00

SECOND-HAND MACHINERY

FOR SALE BY

Homer Strong,

210 State St., Rochester, N. Y.

(Successor to Strong & Hery Co.)

New and Used Machine Tools in stock for immediate delivery.

NEW MACHINES.

SCREW MACHINES.

- No. 0 Foster, plain head, 9-16 wire feed capacity, (3).
No. 2 Foster, plain head, 1 1-16 wire feed capacity, (2).
No. 4 Foster, grd. fr. head, 1 9-16 wire feed capacity, (4).
No. 6 Foster, grd. fr. head, 2 1-16 wire feed capacity, (2).
No. 140 Wells, $\frac{1}{2}$ capacity.
No. 24 Garvin, 1 7-16 capacity.

MILLING MACHINES.

- No. 24 Osterlein universal. | U. S. plain hand, Whitney type, (3).
No. 3 Rockford hand miller. | Standard hand, Whitney type, (2).

SHAPERS.

- 24" Potter & Johnston, (2).

GRINDERS.

- Capital internal grinder, capacity 3-16" to 2x2.
Greenfield universal grinder.
No. 1 Wilmarth & Morman surface grinder.
Wilmarth & Morman No. 2 full automatic surface.
No. 190 Wells tool and cutter grinders, (2).
Dumore portable electric, (6).

LATHES.

- 14"x 6' Mulliner tool room, (2). | 18"x 8' Hamilton, q. c., c. r., single
14"x 6' Hamilton, q. c., c. r., sgl. b. g. | back gear, (2).
16"x 8' Flather, q. c., c. r., dbl. b. g. | 20"x10' New Haven, p. c., c. r., dbl.
20"x 6' Kahn-L., q. c., c. r., dbl. b. g. | back gear.

DRILL PRESSES.

- 10" sensitive bench, with chuck, (6). | 20" Barnes, plain lever and worm
14" U. S. sensitive drills, (3). | feed, (2).
20" Buffalo, b. g., self feed, auto. | 20" Champion, b. g., self feed, auto.
stop, (2). | stop, (2).
20" Barnes, b. g., self fd. auto. stop, (2).

PUNCH PRESS.

- No. 4 Bliss, Stiles pattern, geared.

RADIAL DRILL.

- 4' Radial drill.

COLD ROLLED STEEL.

Very large Rochester warehouse stock; round, flat, square and hexagon screw stock and Cold Rolled Steel.

EMERY WHEELS.

We carry an extensive and complete stock.

USED MACHINES.

SCREW MACHINES.

- 4" Pratt & Whitney automatic screw machine.
Foster No. 4 motor driven screw machine.

MILLING MACHINES.

- No. 2 Garvin hand millers. Lincoln type, (2).
No. 1 Steptoe hand millers, with vise and arbor, (3).

SHAPERS.

- 20" Queen City, b. g., like new. | 24" Cincinnati, b. g.

LATHES.

- 12"x 5' Seneca Falls, p. c., c. r. | 20"x10' Jones & Lamson, p. c., c. r.
14"x 8' Davis, q. c., c. r., with chuck. | 20"x12' Greaves-Kiusman, q. c., c. r.,
18"x 8' Davis, q. c., c. r., taper att., | taper attachment.
pan bed. | 28"x10' Hamilton, q. c., c. r.

DRILL PRESSES.

- Single spindle Sipp, high speed. | 23" Snyder, b. g., automatic feed, (2).
20" Excelsior, b. g., auto feed. | 24" Barnes, sliding head.

25" Hamilton, b. g., sliding head.
We have been in the machine tool and supply business for twenty years and believe we can serve you to your advantage.

SECOND-HAND MACHINERY

FOR SALE BY

W. F. Davis Machine Tool Company

32 N. Clinton St., Chicago.
Singer Building, New York.

Leader News Building, Cleveland
Union Cent. Life Bldg., Cincinnati

BORING MACHINES—VERTICAL.

30" Colburn, one turret head.
New 30" Gisholt, one turret head,
September delivery.
34-42" New Colburn, one turret head,
August delivery.
34" Rogers, one turret head, Sept.
delivery.
34" Gisholt, including motor.

36" N.-B.-P., one plain and one
swivel head, (2).
36" B. & S. one turret head, (2).
New 42" Putnam, 2 heads, Novem-
ber delivery, (12).
53" N.-B.-P. two swivel heads.
72" Niles, two swivel heads.
New 8' Bickford, December del.

BORING MACHINES—HORIZONTAL.

Lucas, 2 1/2" bar.
Hoefer horizontal driller and borer, with 1 11-16" spindle; vertical adjustment,
40"; horizontal adjustment, 46"; table 33x48".
No. 2 Rochester, 3" bar, power feed to table in all directions.
2 Spindle Beaman & Smith, 3 1/2" bar, page 48-G of G-1907 Catalog.

BULLDOZERS.

New No. 4 Garrison (same as No. 4
Williams-White). No. 7 Ajax, 20" stroke.
No. 7 high speed Ajax, 16" stroke.

COMPRESSORS—AIR.

8x8" Curtis, belt driven.
10x10x10" single cylinder Smith-Vaille, steam driven.
10x12" Chicago Pneumatic, belt driven.
10-16 1/2 x 13" Peerless, cross compound, steam driven.
22-13x16" Ingersoll-Rand, motor driven.
Ingersoll-Sargent duplex, 8x14 1/2 x 8".
Ingersoll-Sargent steam driven, 345 cu. ft.
Cincinnati cross compound, two-stage, 790 cu. ft.

CUTTING-OFF MACHINES.

No. 00 Brown & Sharpe, (2).
2" capacity Warner & Swasey.
3 1/2" Hall, (4). 4 1/2" Williams, (10).
4" Curtis & Curtis, (3).

DRILLING MACHINES—RADIAL.

New No. 3 American, pl. cone dr., (2).
New 3' American, sen. tap. att., (3).
New 3' Prentice, July delivery, (7).
New 3' Mueller, pl., spd. box drive.
New 3 1/2' Mueller, cone dr., July del.
New 3 1/2' Western, 86" circle.
4' Mueller, pl., speed box drive, (2). 3' Bickford, gear drive.
5' Bickford, plain, speed box drive.
5' American, plain, motor drive.
5' spindle, arm does not raise and
lower, hand feed, (5).
5' Fosdick pl., cone dr., tapping att.
6' Baush plain, cone drive.

DRILLING MACHINES—HEAVY DUTY.

No. 14 Colburn, 24" swing, cap. 2" in solid steel, (3).
D-3 Colburn, plain table, (2).
No. 26 Foote-Burt, 44" swing, 3 1/2" cap. in solid steel, (2).
No. 310 Baker, single pulley drive, late type.

DRILLING MACHINES—MULTIPLE SPINDLE.

No. 30-C Baush, 12 spindle, cap. 1 1/2" holes, 30" circle.
No. 24 Baush, 12 spindles.
Gardam, 12 spindle, cap. 1 1/2" holes, 14" square.
14 spindle Baush, cap. 1" holes, 36" circle.
No. 11 Pratt & Whitney, 16 spindle, cap. 10 spindles, 1 1/2" cap.

GEAR CUTTING MACHINES.

12" G. & E. gear hobber.
12" & 15" Gleason bevel gear planers.
16" Bilgrim bevel gear generator.
20" Grant-Lees gear hobber.
20" No. 1 S. & S. gear hobber.
24" Fellows gear shaper.
22x8 G. & E. spur & bevel cutter.
GRINDERS—UNIVERSAL FOR CUTTERS, DRILLS, REAMERS.
New Norton No. 1.
New Wilmarth & Morman style BX.
No. 1 Cincinnati. 24x8" G. & E., spur and bevel.
26x10" Cincinnati, spur only.
New 30" Flather, spur only.
36" Fellows gear shapers, (3).
50x11" G. & E., spur only.
No. 3 B. & S. auto. gr. cutter, spur.
New 6" Standard gear cutter, spur.
New Walker No. 2 outfit K., cap.
9x26".
No. 190 Wells, (8).

SECOND-HAND MACHINERY

W. F. Davis Machine Tool Company—Continued.

GRINDING MACHINES—CYLINDRICAL—PLAIN.

6x30" No. 11 Brown & Sharpe.
6x48" Pratt & Whitney.
New 8x26" No. 12 Brown & Sharpe.
10x30" Norton.
New 10x72 Norton, plain.
10x72" No. 16 Brown & Sharpe.
12x36" Modern, self-contained,
motor or belt driven. (6).

12x24" Modern, self-contained, (20).
12x48" Modern, self-contained,
motor or belt driven, (6).
16x66" Landis, with crank grinding.
12x32" Landis, rebuilt.
18x36" Brown & Sharpe.
New 10x36" Landis, immediate de-
livery.

GRINDING MACHINES—CYLINDRICAL—UNIVERSAL.

No. 1 Fraser, with surface gr. att.
10x30" No. 1 $\frac{1}{2}$ Landis.
10x36" No. 2 $\frac{1}{2}$ Bath.
9x20" No. 2 Bath.
New No. 2 Bath.
9x26" No. 2 New Walker.

10x42" Modern.
12x30" No. 2 Brown & Sharpe.
New 12x30" No. 2 Morse, universal.
December delivery.
12x40" No. 3 Brown & Sharpe.
12x42" Landis.

GRINDING MACHINES—INTERNAL.

No. 1 $\frac{1}{2}$ Landis.
No. 70 Heald.

No. 75 Heald.

GRINDERS—CYLINDER.

No. 27 Brown & Sharpe.

No. 60 Heald, single pulley drive.

GRINDERS—DISC.

No. 14 Besly.

New No. 17 Gardner (pat. makers).

GRINDING MACHINES—RING.

No. 200 Heald.

No. 210 Heald.

GRINDING MACHINES—EDGE.

No. 374 Safety Emery Wheel Co.

GRINDING MACHINES—SURFACE.

12x12x24" No. 1 Diamond, automatic.

22x12x60" Spring'd, planer type, auto.

New No. 2 Reid, same as B. & S. (4).

New No. 1 Wilmarth & Morman.

GRINDING MACHINES—DUPLEX.

No. 5 Bath, suitable for grinding cylinders, pistons, piston rings, etc., 16"
feed, swivel table, water pump.

GRINDING MACHINES—FACE.

Diamond face grinder, 4' travel, 14" wheels.

HAMMERS—POWER FORGING.

40-lb. Bradley, helve.

150-lb. Bradley, helve, upright.

HAMMERS—BOARD LIFT, DROP.

400-lb. Billings & Spencer.

2000 lb. Chambersburg.

HAMMERS—STEAM FORGING.

New 600-lb. Bell.

New 3000 lb. Bell, Sept. delivery.

KEYSEATERS.

No. 0 Mitts & Merrill, (2).

60" stroke Compton Knowles

No. 2 Mitts & Merrill, motor drive.

broacher.

LATHES—ENGINE.

New 12"x14' Shepard, reverse hd., (6).

24"x14' American, quick chg., (4).

New 12"x5' Shepard, reverse hd., (8).

New 26"x12' Boye & Emmes, (3).

New 12"x6' Shepard, reverse hd., (3).

26"x24' New Haven.

14"x6' Bradford, taper attachment.

New 28"x12' Boye & Emmes, (4).

16"x6' LeBlond, pan bed, q. c. g.

26"x18' S. & B.

taper attachment, (2).

New 30"x14' Boye & Emmes, (5).

18"x8' L. & S., geared head, taper.

New 32"x12' Pittsburgh pattern, (3).

18"x9' Chard, (3).

36"x15' Fifield, 36x16".

18"x10' Hendey, q. c. g., 14" chuck.

New 36"x24' Putnam, triple grd., (8).

New 19"x8' LeBlond, heavy duty.

38"x19' Steptoe, single back gear.

20"x8' Lodge & Shipley, q. c. g., (22).

24-45"x22' McCabe double spindle.

New 20"x8' American hvy. duty, (7).

48"x27"x9" Betts, triple back gear.

22"x10' Putnam, oil pan, turrets, (9).

60"x27' Betts, triple back gear.

24"x10' Reed, (4).

New 66"x30' Putnam, Dec. delivery.

24"x12' S. & B., (2).

71"x20' Fifield, triple geared.

24"x14' Lodge & S., patent head.

LATHES—TURRET.

2"x24" Jones & Lamson, (5).

6-A Potter & Johnston, (18).

3"x36" Jones & Lamson, (5).

21" Gisholt, (2).

(Continued on next page)

SECOND-HAND MACHINERY

W. F. Davis Machine Tool Company—Continued.

LATHES—MANUFACTURING, NOT SCREW CUTTING.

- No. 3-X Reed-P., semi auto., (13).
 Reed Prentice shell lathes, for 4"
 or 15 lb. American shells, (14).
 14"x6" Reed, stud and bolt, (60).
 16"x8" Fairbanks-M., hvy. duty, (5).
 New Simplex, 16"x8", (70).
 16x8 Simplex, single pulley dr., (14).

MILLING MACHINES—KNEE TYPE, UNIVERSAL.

- New No. 1 Kempsmith.
 No. 1¹/₂ Hendey-Norton.
 No. 2 Kempsmith, back geared.
 No. 2 new Cincinnati.
 No. 2¹/₂ LeBlond, Sept. del'y, (2).
 No. 3-H LeBlond, Sept. del'y, (2).
 No. 3 Cincinnati, single pulley drive,
 high power, vertical attachment.
 New No. 4 LeBlond heavy duty,
 immediate delivery.

MILLING MACHINES—KNEE TYPE, PLAIN.

- No. 0 Pratt & Whitney.
 New No. 1 Rockford, (3).
 New No. 1 Kempsmith, (2).
 1 American.
 New No. 2 Rockford.
 No. 3 LeBlond.
 No. 3 Cincinnati.
 No. 4 Garvin.

MILLING MACHINES—VERTICAL.

- New No. 4-B. Becker, (4).
 No. 2 new Cincinnati.
 No. 5 Becker, (2).

MILLING MACHINES—PLANER TYPE.

- No. 2 Beaman & Smith.
 Ingersoll slab millers, working surface of table 60x20", (2).
 No. 4 Beaman & Smith, vertical spindle, open side, working surface of table
 120x24", removable housing on one side.

PLANERS.

- 24x24"x6" Gray, 1 hd. on cross rail.
 26x26"x8" Gray, 1 hd. on cross rail.
 30x30"x8" Gale, one head.
 30x30"x8" Whitcomb, one head.
 36x36"x12" Powell, high spd., 1 hd.
 36x30"x12" New Haven, 1 head.
 36x36"x9" Sellers, 4 heads.
 36x36"x9" Sellers, 2 heads.
 New 36x36"x12" Woodward & Powell,
 2 heads on cross rail, 1 side head,
 October delivery, (2).
 36x36"x14" Sellers, 4 heads.
 42"x10" Hewes & Phillips, 1 head on
 rail, 1 side head.
 42"x14" Pond, two heads.
 48x48"x16" Sellers, one rail head,
 two side heads.
 50"x14" Powell, one head.
 New 60x60"x14" Woodward & Powell
 four heads, October delivery.
 72x72"x26" Betts, 4 hds., motor drive.
 96x96"x16" Betts, four heads, (2).

SCREW MACHINES, AUTOMATIC.

- No. 51 National Acme, (3).
 No. 52 National Acme, (2).
 No. 53 National Acme, (2).

SHAPERS.

- New 16" Springfield.
 16" motor driven Rockford.
 New 24" Milwaukee, (2).
 New 24" Barker.
 New 24" Steptoe, back gear, (3).

FOR SALE BY

G. L. Bennett Machinery Co., Inc., 30 Church St., New York City

- Bolt cutter, 1¹/₂" Landis, and dies.
 Bolt cutter, 3" Acme, and dies.
 Bolt header, hex. and square heads, 3" Pawtucket.
 Boring machine, horizontal, Newburg, 4" bar, 72" feed.
 Die head, 1" style D, Geometric.
 Engine lathe, 18"x10" Flather, quick change gear, chuck.
 Engine lathes, 18"x8" Davis, double b. g., 3-step cone.
 Engine lathe, 20"x16" Fifield, blocks to 36".
 Engine lathe, 48"x10" New Haven, light pattern.
 Milling machine, vertical, No. 2 Hillis & Jones, rev. table.
 Radial drill, 6" Pond, belted.
 Screw machine, No. 2¹/₂ Garvin, 1 5-16" w. f. capacity.
 Vertical turret lathe, 36" boring mill, Bullard, new.

SECOND-HAND MACHINERY

FOR SALE BY

Henry Prentiss & Company, Inc., - Singer Bldg., New York

Formerly

Prentiss Tool & Supply Company,

BORING MACHINES.

No. 1 Beaman & Smith, double hd.	30" Bullard vertical, 1 head.
24" Bullard vertical, 2 heads.	2-spindle Beaman & Smith hor.

DRILLING MACHINES.

24" Henry & Wright ball bearing, sensitive.	4' Bickford full universal, (11).
4-spindle Woodward & Rogers.	36" Prentice Bros., upright.
4-spindle Barr.	4' Bickford plain radial.
5-spindle Reed.	No. 37 Natco, 18 spindles.
36" Bickford, sliding head.	10 spindle Gardam adjustable.
	No. 4 Quint turret.

GRINDERS.

No. 1 Norton univ., c. and t.	No. 6 Bryant internal.
No. 5 Rivett on stand.	No. 200 Heald, piston ring.
12x60 Landis universal.	No. 34 Van Norman radial.
12x30 Landis plain.	Nos. 1 & 2 Hartford auto. surface.
No. 2 Garvin hole grinder.	Greenfield universal cutter & tool.

LATHES.

11"x3' Barnes, compound rest, power cross feed.	18"x8' American, compound rest, quick change, taper attachment.
15"x8' Hamilton, plain rest, p. c. f., taper attachment.	28"x14' Pond, compound rest.
16"x8' Porter, compound rest, power cross feed.	18"x8' Lodge & Shipley, c. r., p. c. f., quick change.
16"x 6' Automatic threading.	26"x14' Gleason, compound rest, power cross feed.
18"x 6' Reed, compound rest, power cross feed.	36"x14' Pond, compound rest, power cross feed.
18"x 8' Rahn-Carpenter, compound rest, power cross feed.	20-42"x12' Fay & Scott, gap, motor drive.

MILLING MACHINES.

No. 12 Brown & Sharpe plain.	No. 13 Brainerd universal.
No. 34 Garvin plain.	Grant manufacturing.
Rivett swivel miller.	No. 2 Garvin universal.
No. 2 Garvin hand miller.	No. 3 Reed plain.
No. 3 Garvin plain.	No. 2 Pratt & Whitney hand.

PLANERS.

24"x24"x 6' Wheeler.	26"x26"x 5' Pond.
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SCREW MACHINES.

1" Smurr & Kamen.	21" Gisholt turret lathe.
2" Cleveland automatic, (20).	4" Rivett, wire feed.
20x7 F. & S. universal turret.	34" Cleveland automatic.
15x6 Windsor turret.	4" National-Acme. automatic.
20" J. & L., single pulley.	14" Rivett, plain turret.
24" Gisholt turret lathes, (3).	

MISCELLANEOUS.

Cutting-off machine, 64" automatic.	Keyseater, No. 1 Baker Bros.
Gear cutter, 26x10 Cincinnati.	Shaper, 14" Steptoe.
Hammer, 675 lb. P. & W.	Shaper, 24" Hendey.

SECOND-HAND MACHINERY

FOR SALE BY

New York Machinery Exchange, Inc., 50 Church St., New York City

New York's Greatest Stock.

(Partial list)

HAMMERS.

10,000 lb. Sellers, double leg steam.	600 lb. N.-B.-P., sgl. frame steam, (2).
5,000 lb. Sellers, double leg steam.	300 lb. Bement, steam, new.
5,000 lb. Bement, dbl. leg steam, (2).	200 lb. Bradley, upright compact.
2,000 lb. Morgan, steam drop.	200 lb. Bradley, upright strap.
1,800 lb. Billings & S., board drop.	100 lb. Niles-Bement-Pond, hand dr.
1,200 lb. Billings & S., board dr., (3).	60 lb. Bradley, cushioned helve, (2).
1,100 lb. Miles-Bement, sgl. leg steam.	40 lb. Bradley, cushioned helve.
800 lb. P. & W., board drop, forging.	40 lb. Gould & E., hand rope dr., (4).
750 lb. Toledo, rope drop.	

PRESSES.

No. 604 Bliss reducing presses, rack and pinion movement, adjustable stroke from 4" to 42", (6).
 No. 114 Bliss "Stiles" overhanging double crank presses, 4" stroke, (5).
 No. 52 Bliss trimming press, 2" stroke.
 Sanborn & Sons double crank die and cutting, 3" stroke.
 No. 20 Bliss inclinable power, 2" stroke.
 Howard knuckle joint press, 1 1/2" stroke.
 No. 4 Toledo inclinable punch press, 1 1/2" stroke.
 No. 4 Farrell punch press, 1 1/2" stroke.
 No. 2B Brown punch press, 1 1/2" stroke.
 R. Hoe & Co. 350-ton hydraulic press, pump, water tank.
 72" Hydraulic wheel press, 200 ton capacity.

PUNCHES AND SHEARS.

48" Sellers punch, capacity 8" thru 2".
 General Engineering Co. multiple punch, gap type, punch any length plate, weight about 20,000 lbs.
 Hetherington & Berner double geared beam punch, 17" throat.
 Reade multiple punch, 15" throat.
 Pels beam shear "T-40".
 Alligator shear, 15" throat, capacity 1"x6" flats.
 Kling Bros. rotary splitting shear, cap. 1/2" plate, any width, weight 13,000 lbs.
 No. 17 Niagara rotary shear, circle cutting attachment.
 Perkins Model "E" rotary shear.
 Wm. Sellers double end punch & shear, 21" throats, punch 1 1/2" thru 1", shear 1"x6" flats.
 Bass double end punch & shear, 20" throats, capacity 1 1/2" thru 1".
 No. 4 Industrial double end punch & shear, 20" throats, punch 1" thru 1".
 No. 4 Royersford punch & shear, 18" thrt., punch 1" thru 1", shear 3"x8" flats.
 McDougall double end punch & shear, 15" throat, punch 1" thru 1".
 Hilles & Jones single end punch & shear, punch 1" thru 1", shear 1"x3 1/2" flats.
 Coping machine, 3" stroke, weight 10,000 lbs.

BENDING ROLLS.

Ship plate, 9' 2" between housings.
 Niles plate rolls, 8' 6" between housings.
 Niles double geared, drop end housing, 40 1/2" between housings.

MILLING MACHINES.

No. 4B Brown & Sharpe plain, sgl. pulley drive.	No. 2 Cincinnati universal.
No. 4 Brown & Sharpe plain.	New No. 1 1/2 American improved, pl.
No. 4 Cincinnati plain, heavy duty, single pulley drive.	No. 1 Kempsmith plain.
No. 2 Hendey-Norton universal.	No. 1 Pratt & Whitney plain.
No. 2 Cincinnati plain.	No. 3 1/2 Garvin plain, table 12"x36".
	Beaman & Smith 2-spindle vertical, table 24"x48".

BORING MILLS.

30" Bullard vertical turret lathe, (2).	Pratt & Whitney horizontal, 2 1/2" bar.
34" Rogers vert., sgl. turret head, (3).	48" Niles car wheel borer.
38" Bullard vert., sgl. turret head, (5).	Underwood, auto. cylinder, 3 1/2" bar.

SECOND-HAND MACHINERY

New York Machinery Exchange—Continued.

GRINDERS.

- | | |
|--------------------------------------|-------------------------------------|
| 10"x36" Thompson universal. | No. 3 Walker surface. |
| 10"x24" Norton plain cylindrical. | 8"x18" Saxon, surface. |
| 8"x36" Brown & Sharpe No. 12 pl. | 6"x12" Whitney, surface. |
| 6"x32" Norton, plain, (2). | No. 1 Cincinnati universal, cutter. |
| No. 75 Heald internal. | New "BX" Wilmarth & Morman, |
| No. 1 Landis internal. | cutter, reamer and drill, with cyl- |
| No. 1 Brown & Sharpe internal. | indrical and internal attachments. |
| 3' Pratt & Whitney vertical surface. | 6"x32" Buffalo automatic, knife. |
| No. 2 Brown & Sharpe, surface. | No. 4 Gardner double end disc. |
| 12"x24" Diamond, surface. | |

FOR SALE BY

Dale-Brewster Machinery Co., Inc.,

547 W. Washington Blvd., Chicago - 30 Church St., New York

Automatics, 2½" and 2¼" used Cleveland.
 Cutter relieving machine.
 Drills, Nos. 1 and 2 Langelier, h. s., b. b., sensitive, new.
 Drills, D-4, D-3 and D-1 used Colburn.
 Drills, No. 35 and No. 36 Canedy-Otto, power.
 Drilling and boring machines, heavy duty horizontal.
 Grinder, new Wisconsin universal.
 Hack sawing machines, high speed.
 Lathe, 18"x10" new Cisco.
 Lathe, 20"x7'6" new heavy duty plain turning.
 Sheet metal cutter, new No. 1 Gray.
 Sheet metal cutter, new No. 0 Gray.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

LATHES.

- | | |
|---|---|
| 14"x 5' Fitchburg, p. c. g. | 18"x10' Superior, d.b.g. & q. c., (10). |
| 14"x 6' Lodge & Shipley, q. c. | 18"x10' Milwaukee, sgl. bk. gr., (3). |
| 16"x10' Flather, with taper, q.c., (2). | 18"x10' Flather, q. c. |
| 17"x 8' Johnson, p. c. g., (2). | 20"x 8' Flather, q. c. |
| 17"x 8' Sidney, d. b. g. & q. c., (10). | 28"x16' Fay & Scott, h. s. |
| 18"x 8' Milwaukee, sgl. bk. gr., (9). | |

SCREW MACHINES AND TURRET LATHES.

- | | |
|--------------------------------------|--------------------------------------|
| No. 1 Bardons & Oliver. | No. 3 P. & W., b. g., friction head. |
| No. 2 Bardons & Oliver. | 2x24 J. & L., cone drive, bar equip. |
| No. 2 Garvin. | 3x36 Jones & Lamson. |
| No. 4 Foster, (4). | 15" Dreeses turret. |
| No. 3 Garvin, b. g. & friction head. | 24" Davis chucking lathes, (3). |
| No. 2 Garvin, b. g., friction head. | Potter & J. auto. chucking, (5). |

MILLING MACHINES.

- | | |
|-------------------------------|---|
| No. 7 Becker-Brainard, plain. | Wisconsin hand millers, (6). |
| No. 12 Brown & Sharpe, plain. | E. & S. 36" boring mills, tur.hd., (2). |

MISCELLANEOUS.

Cold cutting-off saws, capacities 4", 5" and 6" round.
 Dynamo, 17 k. w. Diehl.
 Gear cutters, 36" Whiton and 36" Gould.
 Hammers, cushioned helve, 250 and 25 lbs.
 Lathe bed turret, heavy, for about 32" lathe.
 Pipe cutting and threading machines, 4" and 6".
 Planers, 40"x40"x12" New Haven, with 1 head, 17"x17"x3' Draper, with 1 hd.
 Pneumatic portable riveter.
 Saws, Atkins "Kwik Kut", (3).
 Slab miller, 19"x8' Beaman & Smith, with two horizontal spindles.
 Stamping and punching presses, a large number of the open back inclinable.
 Melting furnaces, metal band saws, drill presses, grinders, several assorted
 sizes sensitive drill presses, etc.

SECOND-HAND MACHINERY

FOR SALE BY

Enterprise Machinery Co.,

Cold saw, Atlantic, 24" auto. gr. \$ 275.
Crane, 24' steel, 10 ton (\$2500) 600.
Drill, 28" back geared 100.
Drill, multi-sp. American 14" 900.
Lathe, 36"x18", c. r., chuck 550.
Miller, Newton, 4600 lb., v. hd. 800.
Nut tapper, 14", 6 sp 250.
Pipe threader, 24" self op. dies 175.
Planer, 36"x30"x10', Pond 790.
Planer, 42"x42"x15', 2 heads, 1200.

32-34 S. Clinton St., Chicago, Ill.

Press, Ohl, 10'-14 gauge \$1600.
Press, No. 34 Bliss, dbl. acting 750.
Press, hyd., tuft., 2 cyl., 15-t., 12" 125.
Press, scr., b. g. pwr., 12" to 0" 240.
Riveter, hyd. (\$10000.) 10' stake 3750.
Roll grinder, 16"x40" 300.
Screw mch., 3" P & W, col. ck. 260.
Shaper, 16" Gould 140.
Shaper, 24" L. & D. 300.
500 other tools.

FOR SALE BY

Neidow & Payson Co.,

Automatics, 1" to 2".
Boring and turning mills, 41" to 100".
Drills, multiple spindle and sensitive.
Grinders, plain, universal and cutter.
Grinder, Pratt & Whitney vertical.
Hammers, steam, 400 to 1500 lbs.
Lathes, 9" to 90" swing.
Lathes, 2" Jones & Lamson.
Miller, No. 2 Cincinnati.
Planers, 24" to 72" wide.
Shear, gate, 6' Cincinnati.

9 So. Clinton St., Chicago, Ill.

Side Milling Cutters, inserted High Speed Steel Cutters. These Cutters have been used, but are in good condition. Cutters similar to No. 307 P. & W. catalogue, page 106:—

Diam.	Face.	Hole.
4 — 5"	14"	14"
1 — 5 1/2"	1"	1"
8 — 6"	1"	14"

End Milling Cutters, inserted High Speed Steel Cutters. Similar to cutter shown on Brown & Sharpe catalogue, page No. 274:—

Diam.	Face.	Hole.
4 — 9"	14"	4"
4 — 12"	3"	24"

FOR SALE BY

E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

No. 4 Avey high speed ball bearing, drills on column, fine shape (6).
No. 1 Baker Bros. high speed drill.
1 spindle H. & W. high-speed.

25" W. F. & John Barnes.
34" Prentice Bros. plain radial.
36" Bickford plain radial.

GRINDERS.

No. 3 Garvin cutter and surface gr.
10"x25" Bath universal grinder.
10"x50" Norton plain.
9"x20" No. 2 Bath univ. grinder.

4"x30" P. & W. sizing grinder.
8"x15" Norton univ. tool and cutter.
12"x32" Landis plain grinder.

LATHES.

30" Niles double head axle lathe.
14"x8" Pratt & W., taper att.
16"x8" Prentice Bros. taper att.

14"x 6" Lodge & Shipley, q. c. g. (2).
14"x6" Porter.
9"x 4" Star.

SCREW MACHINES.

8" Cleveland automatics, (2).
14" Drees, friction head.
No. 224 Garvin 1 7-16" cap., fric. hd.

3" Foster-Kimball, plain head.
3" Smurr & Kamen, plain head.

MISCELLANEOUS.

Boring, drilling and milling machine, horizontal, No. 2 Rochester.
Brake, 7' Ohl, up-and-down pattern.
Center chucks for ball case grinder.
Filer, No. 2 Cochrane-Bly.
Hand wheel turning attachment.
Hydraulic wheel press, 160-t. Sellers.
Pipe machine, No. 6 Lowe Victor, capacity 24"x8".

Pipe machine, 3" Stover.
Polisher, No. 4 Diamond, motor driven, 230 v., d. c.
Punch & shear, No. 8 Whiting, single end.
Shaper, crank, 16" Barker.
Shaper, 27" Walcott.
Turret lathe, 24"x24" W. & S.
Valve millers, for brass.

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
711 Lakeside Av., N. W. Cleveland, Ohio
Branches: Detroit, Cincinnati, Pittsburgh.

AUTOMATICS.

2" Cleveland. | No. 23 New Britain, chucking.
 No. 22 New Britain, chucking. | No. 33 New Britain, chucking.

BROACHING MACHINES.

No. 1 J. N. Lapointe. | No. 3 Lapointe Machine Tool Co.
 No. 2 Lapointe Machine Tool Co.

DRILLING MACHINES.

15" Barnes. | 4-spindle No. 2 Avey.
 10" Burke sensitive. | 2-spindle No. 2 Avey.
 4-spindle No. 1½ Foote-Burt, rail.

GRINDERS.

6" x 32" Norton. | No. 3 Oesterlein.
 10" x 50" Norton. | No. 12 Gardner, duplex disc.
 10" x 30" Landis. | 24" double wet tool.
 No. 1 Cincinnati cutter. | 20x1½ single wet tool.
 No. 2 Brown & Sharpe, universal. | No. 200 Heald, ring.
 No. 2½ Bath, universal.

HAMMERS.

35 lb. Williams & White, power tire | No. 3 Standard, 300 lb. belt drop.
 welding. | 1200 lb. Bell, steam.

KEYSEATERS.

No. 1 Davis. | 18"x1½" Norton.
 No. 2 Mitts & Merrill.

LATHES.

14"x 6" Sebastian. | 18"x 8" Lodge & Shipley, pt. hd.
 14"x 6" Reed, extra heavy stud. | 18"x 8" LeBlond.
 16"x 6" Lodge & Shipley pt. hd. | 18"x 8" Bradford.
 16"x 8" Walcott. | 18"x 8" Walcott, q. c.
 16"x 8" Reed stud. | 18"x10" Monarch, q. c.
 16"x 6" Harrington. | 18"x12" Monarch, q. c.
 18"x10" Rahn-Carpenter. | 20"x 8" Walcott, q. c.
 18"x 8" Lodge & Shipley, three-step | 30"x14" Lodge & Shipley.
 cone, d. b. g.

MILLING MACHINES.

No. 2 Oesterlein. | No. 8 Pratt & Whitney, hand.
 No. 7-H Becker, Lincoln type. | No. 10 Pratt & Whitney, hand.
 No. 00 Brown & Sharpe.

PLANERS.

24"x24"x 5' Blaisdell, one head. | 36"x36"x10' Sellers, 4 heads.
 26"x26"x 6' Pond.

PIPE MACHINES.

12" Curtis & Curtis.

PRESSES.

No. 2 Consolidated plain inclinable. | No. 5 Stiles & Parke blanking press.

SAWS.

6" Atkins "Kwick-Kut." | 7" high duty Paragon.

SCREW MACHINES.

1½" Foster, motor drive. | 4½" Bardons & Oliver.
 1½" Warner & Swasey.

SLOTTER.

12" Industrial.

TURRET LATHES.

2" Jones & Lamson. | 21" Gisholt.
 14" Warner & Swasey. | 22" Libbey.
 16" Bardons & Oliver. | 24" Gisholt.

MISCELLANEOUS.

Flywheel balancing machine, Rockford.
 Oil separator, Curtis.

SECOND-HAND MACHINERY

FOR SALE BY

The Cincinnati Ball Crank Co.,

Oakley, Cincinnati, Ohio

Butt welder, Toledo type 6.

Cyclodial fan, 20", inlet 10", outlet 10".

Screw machine, single spindle automatic, 2 1/2" Gridley, motor driven.

Swaging machine, hot, No. 7 Langelier.

FOR SALE BY

Wm. E. Hill Co.,

Kalamazoo, Mich.

Cold saw, Wagner No. 2619, 26" saw, type 13, gear connected to General Electric Co. 5 1/2 h. p., a. c. motor, 440 volts, 3 phase, 60 cycles.

Saw grinder for above, direct connected to G. E. 1/2 h. p., a. c. motor, 440 volts, 3 phase, 60 cycles.

Grinder, cutter and reamer, with iron column, 9 1/2" between emery wheels, swivel table for taper reamers adjusted by hand wheel and lever feed; made by Automatic Machine Co., Greenfield, Mass.

Grinder, universal tool, Gisholt.

Keyseat milling machine, No. 5 John T. Burr & Son, 9"x72" table with 3 T-slots, 72" travel, 12" vertical adjustment.

FOR SALE BY

J. L. Osgood,

45 Pearl St., Buffalo, N. Y.

Boring mill, 8' Bickford, same as new.

Chuckling lathe, 21" J. & L.

Chuckling lathe, 24" Davis.

Lathe, eng., 9" Barnes.

Lathe, eng., 15"x8' Porter, and ck.

Lathe, 17"x8' Blaisdell, and chuck.

Lathe, 24" raised to 34", Fifield 12' bed, chuck.

Screw machine, hand, No. 1 Foster.

Piston and ring machine, Gridley automatic, motor drive.

Screw machine, hand, 1" P. & W. hex turret.

Screw machine, hand, 1/2" B. & S.

Screw machines, No. 5 Warner & S.

Spur gear testing mch., Gleason.

Squaring shear, foot, 30" Niagara.

Time recorder, International, 200 numbers.

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at Chicago, Boston and New York

LATHES.

12"x 5' speed lathe.

15"x 7' speed lathe.

16"x 8' VonWyck, quick change.

32"x12' Pond, 220 v., d. c. motor dr.

No. 2 Bement double axle lathe.

42" Niles double car wheel lathe.

21"x48" Harrington gap bor. lathe.

TURRET AND SCREW MACHINES.

4" four-spindle old style Acme automatic screw machine.

3" Style "B" Spencer single turret automatic screw machine.

1 1/2"x14" Pratt & Whitney turret lathe, wire feed.

DRILLING MACHINES.

13" friction, sensitive.

3" Grant combined radial drill and boring machine.

3 1/2" Bement, plain radial.

4" 6" Barr plain radial.

Prentice portable radial.

Four-spindle gang drill.

No. 12 P. & W. multiple drill, square head, 10 spindles.

No. 13 Pratt & Whitney multiple, 1/2" capacity, 12 spindles.

No. 10 Pratt & Whitney multiple, 1 1/2" capacity, 10 spindles.

MISCELLANEOUS.

Boring mch., horiz., Kelly, 2" spdl.

File sharpener, American.

Punch & shear, double, Huntington,

cap. 1/2" in 1/2", with 18" and 24" throats, arr. for motor drive.

Planer, 48"x48"x10' Pond, 2 heads, 220 v., d. c. motor drive.

Punch, single, Perkins, cap. 1/2" in 1/2", 7" throat.

Saw sharpener, Espen-Lucas.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co.,

117-121 N. Jefferson St., Chicago

Immediate Delivery.

DRILLING MACHINES.

Leland, h. s., b. b., bench type.
No. 1 $\frac{1}{2}$ Knight driller and miller.
20" Kern, b. g.
No. 25 Foote-Burt 24", new.
32" Hamilton, s. h., b. g., p. f.
34" Hamilton, s. h., b. g., p. f.
30" Valley City radial.

3' W. Gang plain radial.
6' Fosdick plain radial, new.
Avey 4-spindle, b. g.
12-spindle multiple, P. & W.
No. 30-C Baush, 12-spindle.
20" W. F. & J. Barnes, 4-spindle.

GEAR CUTTERS.

Reynolds hobber.
No. 11 B. & S. automatic.
30"x9" Gould & Eberhardt automa-
tic, for spur and bevel.

24"x7" Gould & Eberhardt, for spur.
26" No. 3 B. & S., for spur.
36" Walcott, for spur.
36"x3" G. & E., for spur.

GRINDERS.

Yankee drill grinder.
Leland universal, with power feed.
8"x30" Modern, plain, new.
14"x20" B. & S., plain.

Garvin hole grinder.
Gisholt tool grinder.
No. 5 Diamond, water tool.

LATHES.

No. 3 $\frac{1}{2}$ Rivett.
No. 3 Cataract.
No. 5 Cataract.
13"x 5' P. & W., c. r., taper.
14"x 6' Davis, p. r.
14"x 6' Fairbanks, c. r., taper.
16"x 6' Prentice, c. r.
16"x 6' Bradford, c. r., q. c. g.

18"x 8' L. & S., pat. head, c. r., taper.
18"x10' Fitchburg, c. r.
18"x12' Barker, c. r.
20"x14' Blaisdell, c. r.
21"x12' New Haven, c. r.
24"x13' New Haven, c. r.
36"x20' American, t. b. g.
34"x60' Fitchburg Lo-Swing.

PLANERS.

36"x36"x12' Powell, 2 heads.
36"x36"x16' Sellers, 1 head.
40"x38"x14' Putnam, 1 head.

40"x40"x12' New Haven, 1 head, one
side head.
39"x39"x12' New Haven, one head.

SCREW MACHINES.

1" B. & S. plain.
16" P. & W. plain.
No. 2 Foster, plain head.
No. 2 Costello, plain head.
No. 2 P. & W., friction head.
No. 3 Foster, geared head.
No. 4 Pearson, geared head.

No. 3 Bardons & Oliver, plain head.
No. 12 $\frac{1}{2}$ Garvin, friction head.
No. 2-G B. & S. automatic.
3" Cleveland automatic.
2 $\frac{1}{2}$ "x11" Acme, (4).
No. 6 Warner & Swasey, (3).

TURRET LATHES.

16" Garvin, friction head, c. c. & w. f.
16" Lodge & Shipley.
25" Niles.
No. 2 Warner & Swasey, hollow
hexagon.
2"x24" Jones & Lamson.

3"x36" Jones & Lamson, chucking
equipment.
3"x36" Jones & Lamson, bar equip.
3"x36" Warner & Swasey, dbl. spdl.
21" Gisholt, with taper.
24" Gisholt tur. lathes, taper att., (2).

PUNCHES AND PRESSES.

No. 3 American Can, o. b. i.
No. 3 Baurth, o. b. i.
No. 5 Baurth geared, o. b. i.
No. 5 L. & A. dbl. punch & shear.
No. 1 L. & A. horizontal punch.

No. 1 L. & A. multiple punch.
No. 2 L. & A. multiple punch.
No. 2 L. & A. angle iron shear.
No. 2 Cleveland double end punch
and shear.

MISCELLANEOUS.

Broacher, No. 3-A Lapointe.
Car-wheel boring mill, 52" Niles.
Forging machine, 3" Acme.
Keyseater, No. 1 Davis.

Keyseater, No. 2 M. & M.
Keyseater, No. 3 M. & M.
Pipe machine, 3" Stover.
Thread miller, 6"x14" P. & W.

SECOND-HAND MACHINERY

FOR SALE BY

The Bicknell Mfg. & Supply Co.,

Janesville, Wis.

Anvils, Peter Wright.
Grinder, No. 60 Heald.
Hammer, Bicknell helve.
Lathe, 14x6 Shephard.
Lathe, 22x12 S. & B.
Lathe, 24x8.
Miller, new lathe miller, converts a lathe into a milling machine.

Miller, Garvin-Lincoln.
Miller, special for milling hand wheels and circular work.
Planer, 25x25x9 Fitchburg.
Punch and shear, new, double end, alligator type.
Shaper, 16" Springfield Mch. Co.
Shaper, 24" friction, geared.

FOR SALE BY

C. M. Thompson Co.,

35 S. Clinton St., Chicago

Boring and turning mill, 80" vertical.
Drilling machine, 3" Baker high duty.
Drill presses, 23", 24" and 28".
Gear cutters, No. 3 and No. 13 B. & S. automatic.
Grinders, No. 60 Heald.
Grinder, surface, No. 2 Saxon.
Lathes, 9", 14", 16", 18" and 22".
Miller, plain, No. 3 Cincinnati.
Shapers, 16", 18" and 24".
Turret lathes, 2" Jones & Lamson, sliding head.

FOR SALE BY

Federal Machinery Sales Co.,

8 N. Jefferson St., Chicago, Ill.

A Fine List of First Class Tools—Good as New.

DRILLING MACHINES.

20" sta. head upright drills, some with b. g. & p. f., and some with w. & l. feed only, (24).
24" Hoefler sliding hd. upright drill, w. & l. and gd. pr. fd., b. g.
25" Hamilton sliding head upright drill, b. g., pr. fd.

Mueller 4" plain radial drill, latest pattern, gr. box drive, tapping att., good as new.

2-spindle Barnes 20" gang drill, one head with b. g., and pr. fd., one head with pr. fd., no b. g., one hd. with fric. reverse pulleys for tap'g.

GEAR CUTTERS.

Gould & Eberhardt full automatic spur and bevel gear cutter, 22" d. x 5" f. x 6 p.

Whiton 30" full automatic gear cutter, spur gears only.

GRINDERS.

No. 2 Oakley universal cutter and tool grinder, complete.
Landis 8"x20" universal grinder, A-1 condition.
No. 2 American surface grinder.

Landis 16"x66" crank grinder, with both crank and plain heads.
No. 39 Safety Emery Wheel Co's plow grinders, (3).

LATHES.

16"x8' Lodge & D., s. b. g., c. r., h. s.
16"x8' Pratt & Whitney, s. b. g., c. r., h. s., taper.
17"x8' National, q. c. g., s. b. g., c. r., h. s.

17"x8' Cincinnati, s. b. g., c. r., h. s.
18"x8' South Bend, s. b. g., c. r., h. s., (2).
18"x12' American, s. b. g., c. r., h. s.

MILLING MACHINES.

No. 0 Bristol hand miller.
Gooley & Edlund, Briggs type A, heavy duty miller, 16" travel.
Pratt & W. No. 2 Lincoln miller.
No. 1 1/2 Grand Rapids plain miller, geared feed.

No. 1 1/2 American universal miller, all attachments.
No. 3 Aurora plain miller, A-1.
No. 4 Garvin plain miller.
No. 13 Brown & Sharpe, mfg. type.

PLANERS.

42"x42"x10' Hewes & Phillips, worm gear drive, one rail head, one side head, both with power feeds, power elevation to rail, A-1 condition.

SECOND-HAND MACHINERY

Federal Machinery Sales Co.,—Continued.

PRESSES.

No. 5 Cleveland plain inclinable power press, 4' stroke. C-2 Ferracute inclinable press, 2" str.
C-1 Ferracute inclinable press, 2" str.

SCREW MACHINES AND TURRET LATHES.

No. 1 Bardons & Oliver plain head screw machine, 13-16" capacity. 21" Pond "rigid" geared hd. turret lathe, 3/4" hole in spindle, A-1.
20" swing x 8' bed Hamilton std. eng. turret lathe, fric. head, s.b.g., 3"x36" Jones & Lamson geared hd. turret lathe, bar equipment.
pan bed, pr. fd. turret on bed, good as new.

SHAPERS.

20" Lodge & Davis, plain crank. 20" Hendey, friction.

MISCELLANEOUS.

Brake, hand, 10' Dreis & Krump. Shear, gap, 5', No. 14 gauge, Bertsch, foot power.
Cold saw, 3' Smith & Post. Shear, splitting, style D 14 Rock River, power geared.
Riveting hammer, No. 4-A High Speed Hammer Co.

Write for complete description and prices.

FOR SALE BY

McMullen Machinery Co.,

Grand Rapids, Michigan

Blower, No. 2 Garden City.	Hammer, 60 lb. Rochester, helve.
Bolt cutter, No. 2 Acme.	Hammer, Quickwork, power, (2).
Drill, No. 2 Quint 6 sp. turret.	Lathe, 24"x24" Fifield, engine.
Drill, 26" Barnes, sl. head, p. f., b. g.	Lathe, 34"x12" Parmalee, engine.
Drill, 14" Sterling, with taper.	Miller, No. 4 Kempsmith, univ.
Drill, No. 1 Avey 3 sp. sensitive.	Miller, No. 3 Garvin, hand.
Drill, Henry & Wright 3 sp. sens.	Miller, No. 1 B. & S., universal.
Furnace, No. 1 Stewart, oven.	Riveter 1/2" Shuster, (2).
Grinder, Eames, drill.	Shear, No. 2A Quickwork rotary.
Grinder, R. & K., disk & surface.	Turret, 16" Oliver p. f., a. c. & w. f.

Send for complete list.

FOR SALE BY

B. C. Allen Machinery Co.,

1000 W. Randolph St., Chicago

Drill, post, No. 16 Canedy-O., \$ 35.	Lathe, 18"x10' Bradford,.....\$500.
Drill press, 20" and chuck,.... 40.	Lathe, 24"x10' Mueller,..... 785.
Drill press, 24"..... 150.	Lathe, bench, Waltham,..... 110.
Emery grinder, No. 3 complete. 15.	Lathe, No. 4 Barnes,..... 58.
Lathe, 11x5 Johnson, ft. & pwr. 135.	Miller, plain, b. g., No. 2..... 325.
Lathe, eng., 12"x5' Reed,..... 140.	Miller, univ., No. 2 Putnam,.... 475.
Lathe, 13"x5' Willard, d. b. g., 325.	Motor, 1 h. p. d. c., and starter 25.
Lathe, 14"x6' American, q. c. g., 510.	Punch press, No. 0,..... 115.
Lathe, speed, 15"x5', set over... 60.	Screw machine, 1/2"..... 100.
Lathe, 16"x6' Barker,..... 325.	Shaper, geared, 24" Hendey,.... 225.

FOR SALE BY

The O'Brien Machinery Co.,

119 N. Third St., Philadelphia, Pa.

Lathe, 16"x6' Cincinnati.
Lathe, 16"x9' Lehman.
Lathe, 18"x8' Cincinnati.
Lathe, 21"x14' New Haven.
Miller, Kempsmith universal, 36"x8' table.
Press, C-5 New Ferracute.
Press, Slaysman No-4A, (2).
Shaper, 15" Kelly.
Shaper, 16" back geared, American.
Shaper, 16" back geared, Smith & Mills.

SECOND-HAND MACHINERY

WANTED BY

Morris Benjamin, * * * **212 Centre St., New York City**
ELECTRIC MOTORS.

I want to buy electric motors, alternating and direct current, from $\frac{1}{2}$ h. p. to 500 h. p., 1-2-3 phase, and 220 volt direct current; send list and prices; quick action.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,
1001-3-5 N. 6th St., **St. Louis, Mo.**

LATHES.

14"x 6' Porter.	18"x 8' Rahn & Larmon.
15"x 8' Prentice.	24"x 12' Forsaith.
17"x 6' Johnson.	30"x 18' Pond.

DRILLING MACHINES.

18" Sibley.	24" Hickford.
20" Sibley.	28" Bickford.
24" Aurora.	

SHAPERS AND PLANERS.

16" Steptoe-McFarland.	24"x 24"x 6' Lodge & Davis.
------------------------	-----------------------------

AIR COMPRESSORS.

6"x 6" belted.	12"x 12"x 12" steam driven.
8"x 8" belted.	

HAMMERS.

25 lb. Bradley.	130 lb. Justice.
40 lb. Bradley.	600 lb. rope drop.
50 lb. Little Giant.	

MOTORS AND GENERATORS.

10 h. p. 3 ph. 60 cy. 220 v. motor.	150 k. w. 250 volt, d. c. generator.
50 h. p., 125 volt, d. c. motor.	Electric elevators complete, (2).
55 h. p., 250 volt, d. c. motor.	

MISCELLANEOUS.

Arbor press, 30 ton.	Cold saw, No. 2 Espen Lucas.
Bending rolls, 20" long.	Grinder, plow share, No. 35.
Boring mill, 34" Colburn, tur. hd.	

FOR SALE BY

Herman L. Winterer, **908-910 Beach St., Philadelphia, Pa.**

LATHES.

38"x 14' Fifeild.	21"x 10' Lodge & Davis, c. r.
36"x 8' Harrington.	20"x 8' Flather, c. r.
31"x 16' Fifeild.	20"x 8' Putnam.
29"x 18' Schumacher & Boye.	20"x 8' Perkins.
26"x 10' Pittsburgh, d. b. g.	19"x 10' Fitchburg, b. g., (2).
22"x 10' Johnson.	18"x 12' New Haven, b. g.
21"x 28' LeBlond dbl. combination.	18"x 10' Davis.
21"x 14' Blaisdell, b. g.	18"x 6' Lodge & Davis.

TURRET LATHES.

4"x 28" Pond.	3"x 28" Lodge & S., chucking.
7"x 14" Potter & J., semi-automatic.	27" chucking.

MISCELLANEOUS.

Boring mill, hor., 48" Beaman & S.	Planers, 20 to 24" with 6 & 8' beds, (6).
Cold saw, 20" Newton.	Planer, 36"x 36"x 9', with four heads.
Drill presses, all sizes.	Planer, 36"x 36"x 9', with two heads.
Hydraulic forcing press, 135 ton.	Punch, 12" gap, Fischer, cap. 1" in 1".
Keysater, No. 2 Davis.	Punch and shear, d. e., 21" throat,
Milling mche., univ., No. 1 B. & S.	capacity, 1"
Milling machine, universal, No. 1 Cincinnati.	Roll grinder, 10"x 36"
Milling machine vert., No. 5 Becker Brainard.	Shaper, 24" Hendey, shifting belt.
	Shaper, 24" Lodge & Davis.
	Shapers, 20" Gould & Eberhardt, (2).

Large assortment of Boilmakers' and General Machinery.
Send for complete list.

SECOND-HAND MACHINERY

FOR SALE BY

Peninsular Machinery Co.,

110 Beaubien St., Detroit, Mich.

Countershaft, 115-16" with 18x5 t. & l.
Drill, 10" Hoefler, disc.
Drill, 14" single spindle sensitive.
Drill, 12" Barr sensitive.
Drilling head, 2-spindle, 3" to 8".
Flexible shaft, with c. s., Stow.
Forming roll, 14 ga. 48" long.
Grinder, emery, No. 3 Blount.
Grinder, cutter, No. 1 Garvin.
Grinder, cutter and tool, LeBlond.
Grinder, twist drill, New Yankee.

Lathe, 14x5 LeBlond, rapid prod.
Lathe, 14x6 LeBlond, engine, c. r.
Lathe, 14x8 LeBlond, engine, c. r.
Lathe, 17x10 LeBlond, automobile.
Miller, hand, No. 1 Whitney type.
Miller, No. 1 Van Norman, hand.
Miller, No. 1 U. S., hand.
Screw machine, plain, No. 0 Foster.
Screw machine, plain, No. 3 Foster.
Screw machine, grd., No. 3 Foster.
Screw machine, grd., No. 5 Foster.

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

ENGINE LATHES.

12"x6' LeBlond, c. r., taper att.
14"x6' Prentice Bros.
16"x8' LeBlond, comp. rest.
18"x8' Morris, 3-step cone, d. b. g.,
3 with c. r., 6 with turrets on carriage
and air chucks fitted to spindle.
26"x20' New Haven, c. r.

18"x36"x10' LeBlond sliding bed gap
lathe, 6' closed, 9' extended.
19"x8' Sidney, c. r.
24"x10' LeBlond, c. r.
24"x10' American, geared head, c. r.
and taper attachment.
24"x12' Perkins, c. r.

TURRET MACHINERY AND SCREW MACHINES.

No. 1 Pearson, w. f., a. c., 3".
No. 2 Garvin, w. f., a. c., 3".
16"x6' Star, back geared.

18"x6' American Fox Monitor, f. h.
12" Foster plain monitor.
No. 124 Garvin, w. f., a. c., 1 1/2" f. h.

PUNCH PRESSES.

No. 2 Toledo, o. b. i., 4" str.
Consolidated horiz., 8" str.
No. 202-B, Toledo, dbl. crank, b. g.,
28" between uprights, 14" str.
6' presses.

No. 1 Robinson, s. b., 1 1/2" str.
No. 174-B, Consolidated, b. g., 48"
between housings, 21"x60" bolster
plate, 2" str.
No. 4 Bliss, solid back, 1 1/2" str.

MILLING MACHINES.

No. 3 Carter & Hakes, hand o. a.,
with vertical spindle attachment.
Davis, hand bench, collet att.
Chicago hand millers, (3).
No. 1 Knight vertical miller.

No. 9 Kempsmith, 34" auto. feed.
8" Betts slotter, 36" swing, 22"
rotary table.
No. 14 Knight vertical miller.

DRILL PRESSES.

13" Acme, sensitive.
13" Rockford, sensitive.
14" Allen, sensitive.
14" Barnes, gear driven.
20" Barnes, plain.
20" Sibley & Ware, plain.

3 and 4 sp. Henry & Wright.
Andrew 9-spindle straight line ad-
justable rail drill, 8" maximum
centers, 3" minimum.
4-sp. Avey ball bearing, 15" swing.

SHAPERS.

16" Cincinnati, crank.
24" Smith & Mills

15" Lodge & Davis, crank.

MISCELLANEOUS.

Brake and folder comb., 4' Niagara.
Broacher, No. 2 J. N. Lapointe.
Buffers, motor driven, (5).
Bulldozer, double end, wt. 7500 lbs.
Fender wiring machine, Yoder.
Grinder, gear cutter, Gould & E.
Hammer, steam dr., 600 lbs. Bement.
Keyseater, 14" Morton.
Keyseater, No. 2 Davis.

Speed lathes, 10"x4' Seneca Falls
"Star", (3).
Square shears, 30" Niagara, ft. p., (3).
Square shear, power, 7' Niagara.
Square shear, power, 3' Stoll.
Squaring shear, 10' Ryerson, with
rotary traveling cutter.
Toggle brake, power, 6' Robinson.
Worm gear hobber, 18" Grant-Lees.

Large Assortment of tinnerns' tools, folders, rolls, punches, shears, etc. Elec-
tric motors, drill grinders, arbor presses, chucks, machinists' bench vises.

SECOND-HAND MACHINERY

FOR SALE BY

Machine Tool & Supply Co.,

Davenport, Iowa.

Boring and facing lathe, 28".
 Drill presses, 28" Sibley, sliding head, complete, (2).
 Drill, 42" Barnes, sliding head, complete.
 Drill, 23" Snyder, with tapping attachment.
 Drill, 23" Snyder, sliding head, power feed.
 Engine lathe, 15"x6" Flather, quick change.
 Planer, 22"x22"x8" Ohio, with vise.
 Planer, 22"x28"x8" Gray.
 Shaper, 20" American, b. g.
 Turret lathe, Steidle, 6 1/2" spindle.
 Big stock of turret lathes, screw machines, drill presses, grinding machines, lathes and wood-working machinery.

FOR SALE BY

Brownell Machinery Co.,

11-13 Eddy St., Providence, R. I.

Boring mill, 36" Baush & Harris.
 Cutting-off machine, 3" H. & R.
 Gear cutter, No. 13 B. & S. auto.
 Gear cutter, No. 3 B. & S. auto.
 Gear cutter, 30" Newark automatic.
 Gear cutter, 30" old style Brainerd.
 Gear generators, 12" Gleason, single tool, (2).
 Grinder, 5"x48" Pratt & Whitney.
 Grinder, 3" P. & W. vertical surface, with magnetic chuck.
 Grinder, surface, No. 2 Binsse.
 Grinder, universal, No. 2 Bath.
 Lathe, 16"x6" Reed, r. s., (4).
 Lathe, 16"x7" Oliver, new.
 Lathe, 18"x8" Porter.
 Lathes, 18"x8" Davis, d. b. g., (3).
 Lathe, 18"x10" Rahn-Larmon, new.
 Lathe, 18"x12" Rahn-Larmon, new.
 Lathe, 22"x10" Nicholson & W.
 Milling machines, Reed, plain, (2).
 Milling machine, No. 2 Brown & Sharpe, old style.
 Shaper, 20" Lodge & Davis.

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES.

26"-48"x14' new dbl. spdl. McCabe, heavy pattern.
 28"x13" Harrington.
 24"x10' new Carroll-Jamieson.
 20"x12" Schumacher-Boye.
 20"x10" Bullard, t. a.
 20"x10" Blaisdell.
 20"x10" Fitchburg.
 19"x10" Rahn-Mayer.
 18"x 8" Draper.
 17"x8' new National, q. c. g.
 19"x 8' new Sidney, d. b. g., q. c. g., swing 21" over shears, (4).
 17"x8' new Sidney, d. b. g., q. c. g., swing 19" over shears.
 16"x8' Greaves & Klusman.
 15"x8' Carroll-Jamieson, new.
 14"x10' Prentice, t. a.
 13"x7 1/2' Carroll-Jamieson, new.
 13"x5 1/2' Carroll-Jamieson, new, (2).

SCREW MACHINES.

2" Cleveland automatic.
 24" Gisholt, motor driven.
 2 1/2" Foster, wire feed, ring.
 2"x24" Jones & Lamson.
 14"x5" Lodge & Shipley, wire feed.
 14"x5" Warner & Swasey, Fox.
 No. 2 Garvin.
 3" P. & W., hand.

MISCELLANEOUS.

Drill, D-4 Colburn high duty.
 Drills, 20" Rockford, high duty, (3).
 Drill, 20" Superior, new.
 Drill, 25" Superior, slid. hd., new.
 Drill, 28" Superior, slid. hd., new.
 Grinder, universal, No. 3 B. & S.
 Grinder, universal, 10"x20" Bath.
 Hammer, steam 800 lb. Bement.
 Miller, plain, No. 1 1/2 American, new.
 Miller, plain, No. 3 Kempsmith.
 Miller, universal, No. 3 LeBlond.
 Miller, hand, No. 6 Steptoe, new.
 Pipe machine, 4" Williams, new.
 Radial drill, 36" Dreses.
 Radial drill, 42" Baush.
 Radial drill, 48" Harrington.
 Shaper, 15" Bement, traveling head.
 Shaper, 16" Gould & Eberhardt, b.g.
 Shaper, 20" Cincinnati, back geared.
 Shaper, 24" Flather, back geared.

SECOND-HAND MACHINERY

FOR SALE BY

Wayne Machinery Co., Taylor St. & L. E. R. R., Fort Wayne, Ind.

Bolt cutters, $\frac{1}{2}$ ".
Drills, 10" Barnes friction, (5).
Drill, 14" Champion, geared.
Drill, 20" Champion, p. f.
Gear cutter, Walcott.
Hammer, 25-lb. Mayer, upright.
Lathe, 14"x6" Flather engine.
Lathe, 15"x5 $\frac{1}{2}$ " No. 1 American, brass.
Lathe, 16"x8", Greaves-Klusman.
Planer, 12"x12"x24" Wilkenson Co.

Planer, 16"x16"x3' Whitcomb.
Press, No. 32 Toledo.
Riveter, No. 530 Prouty.
Riveter, $\frac{1}{2}$ " Shuster.
Screw machine, 16"P. & W., g. f. h.
Shaper, 16" Hendey.
Tire welder, No. 4 L. & A.
Welding machine, No. 6-A Toledo electric butt welder.

New tools for any requirement.

FOR SALE BY

**Cyril J. Bath & Co., Offices 428 Leader-News Bldg., Cleveland, O.
Warehouse 1031 West Front St.**

BORING MILLS.

36"x60" Beaman & Smith horizontal, $3\frac{1}{2}$ " bar, all drilling and milling feeds.
2 sp. Foote-Burt cylinder boring machine; spindles adj. from 4" to 12" centers, 10" table feed, 3-step cone drive for 4" belt, worm driven; excellent.
36" Bullard, 2 swivel heads, gear feed, cone drive; very good.
4-spindle Foote-Burt vert. cylinder boring machine, worm drive to spindles, table feed; in excellent shape.

DRILLING MACHINES.

3' Bickford plain radial drill, swinging square table on round column, cone drive; very good condition.
42" Bickford radial, single pulley gear feed, tapping att.; first class.
20" Prentice upright stationary head drill, power and hand feed, round swivel table and square base, also with hand feed only.
24" Barnes, b. g., p. f., stationary head, round swivel table and planed base, belt feed, cone drive for $3\frac{1}{2}$ " belt; very good.
24" Aurora, sliding head, b. g., p. f., belt drive, 3" belt; very good.

LATHES.

14"x 6' LeBlond, plain turning p. r., h. s., b. g., 4 step cone, h. s., belt feed, power cross feed; good condition.
14"x 6' LeBlond, compound rest, complete screw cutting; very good.
14"x 6' Davis, compound rest, late model; good.
P. & J. 7x14 automatic turret chucking machines; good condition, (2).
24"x16" Pond Machine Works, comp. rest, very good.
24"x24" Pond, arranged for shaft turning with taper attachment, turning rest, full equipment for plain or screw cutting work; very good condition.
32"x12" Porter, compound rest, hollow spindle; excellent condition.
No. 22 and 24 New Britain automatic chucking machines; good as new.

PRESSES.

76 $\frac{1}{2}$ " Bliss, straight side, single crank, tie rod frame, double geared, friction clutch, 18" stroke, 12" die space, 7" shaft.
77 $\frac{1}{2}$ " Bliss, straight side, single crank, tie rod frame, double geared, friction clutch, 10" stroke, 17" die space, 8" shaft, (2).
78 $\frac{1}{2}$ " Bliss, straight side, single crank, tie rod frame, double geared, friction clutch, 10" stroke, 24" die space, 10" shaft.

MISCELLANEOUS.

Automatic steel threading mch., 1"x6" National Acme, almost new.
Band saw, wood, 36" Crescent, almost new.
Cut-off saws, Peerless high speed, 6" capacity.
Gear hobber, Grant-Lees, cap. about 18"x4" spurs, spirals or bevels, good.
Grinder, full univ., No. 1 Landis, cap. 10"x20", for external, internal and face grinding; belt feed; over-head c. s.; very good.
Grinder univ. tool and cutter, Greenfield, complete; good condition.
Hammers, upright helve, 75 and 150 lbs. Bradley; good.
Punch press, No. 2 Stiles, 24" flywheel, 12" thrt.; 14" stroke; very good.

SECOND-HAND MACHINERY

FOR SALE BY

Swind Machinery Co.,

Widener Bldg., Philadelphia, Pa.

For Immediate Delivery.

Air forging hammers, No. 3 Nazel Beche, capacity 5x5", used, (4).

Air forging hammer, No. 4 Nazel Beche, capacity 7x7", used.

Grinder, universal, No. 1 Landis.

NEW MACHINES.

Drill press, 3-spindle Kern, ball bearing.

Grinders, universal cutter and reamer, high grade, (2).

Grinder, universal profile, Fischer.

Lathes, 24"x14" quick change gear, with 3-step cone and dbl. back gears, (6).

FOR SALE BY

Badger-Packard Mchy. Co., 133-139 W. Water St., Milwaukee, Wis.

LATHES.

11"x5' Star No. 30-P.

12"x4' Martin Fox.

13"x7' Shepard.

16"x8' LeBlond, 4-st. cone, s. b. g.

16"x8' Flather, 4-st. cone, o. b.g., q.c.

20"x10' Blaisdell, c. r., solid sp.

MISCELLANEOUS.

Grinder, plain and surfacer, LaSalle.

Grinder, water, 20" Diamond No. 64.

Grinder, drill and reamer, Wilmarth & Morman.

Oven furnace, No. 26 Stewart gas burners.

Pipe mch., No. 1 Merrill, complete with c. s., 1" to 2" capacity.

Planer, 24"x24"x6' Smith & Silk, one head on cross rail.

Planer, 26"x26"x6' Pond, one head on cross rail.

Shaper, crank, 14" Steptoe.

Shaper, 16" Smith & Mills.

Shaper, 16" Potter & Johnston, motor driven.

Shaper, traveling head, 18" Bement-Miles.

Shaper, b. g. crank, 18" Juengst.

FOR SALE BY

Hudson Motor Car Co.,

Detroit, Mich.

List of Machinery for disposal, on hand at Hudson Motor Car Plant. Prices on inquiry.

LATHES.

14" Fay automatic lathe, 14" swing over shears and 10" under carriage, turn to 10" length, with equalizing drive face plate, self-contained taper attachment, oil pump, piping and change gears; practically new.

19"x8' LeBlond heavy duty, complete with countershaft, etc.; never been used.

19"x6' LeBlond heavy duty automobile lathes, complete with turret tool posts; absolutely new. (7).

Serial No. 16-249 Gisholt lathe; diam. of chuck, 24"; swing over ways, 24", swing over carriage, 13 1/2"; traverse of turret, 50 1/2"; bore of spindle, 2 1/2"; diam. of holes in turret, 3"; width of belt, 4"; length over all, 11' 4"; width over all, 3' 10"; shipping weight, approx. 8,000 lbs.; h. p. motor for main drive, 4 1/2; h. p. motor, turret rapid traverse, 1. This machine has been in use about a year and is in excellent condition.

MISCELLANEOUS.

Bow chucking machine, 99 Defiance, complete with counter belt, shifting apparatus, 2 chucking heads, knives, guards, 1 cast-iron master cam and necessary oil cups and wrenches; very little service.

Bow shaping and equalizing machine No. 598, complete with all standard equipment; practically new.

Drill, double spindle horizontal, 2x8 Barnes, in excellent condition.

Grinder, valve, 12-spindle Foote-Burt; practically new.

Grinders, chucking, Bryant No. 6, 1 new and 1 used, (2).

Grinder, chucking, Bryant, double spindle; new.

Grinder, disc, No. 6-K Diamond, serial No. 5125; slightly used.

Grinder, disc, No. 4 Gardner; slightly used.

SECOND-HAND MACHINERY

FOR SALE BY

Broadway Machinery Co., 236-238 Broadway, Cincinnati, Ohio

Bolt cutter, Landis, 3 hds.
Boring mill, 32" Landis, turret hd.
Drill, upright, 22"
Drill, upright, 26"
Gear cutter, 26" G. & E.
Gear cutter, No. 1 Whiton.
Gear generators, 16" Bilgrim, (2).
Gear hobber, 24" S. & S.
Grinder, univ. cutter & reamer, No. 1 Cincinnati.
Grinders, Bath, (2).
Grinder, No. 24 Landis.
Grinders, planer type, B. & S.
Grinder, univ., No. 3 B. & S.
Lathes, 12" to 50" swing.
Miller, plain, no back gear.
Miller, No. 1 Pratt & Whitney.

Miller, vert., Becker-Brainard.
Miller, univ., No. 2 B. & S.
Planer, 44"x44"x16" Niles, 1 hd.
Press, No. 21 Bliss, inc.
Press, No. 51 Ferracute.
Presses, board drop, 100 and 400 lbs.
Punch, No. 4 L. & Black, sgl. end.
Radial, drill, 4' Bickford.
Radial, drill, 4' full universal.
Radial, drill, 5' Cincinnati-Bickford.
Screw mchs., Nos. 2 & 3A W. & S.
Screw mch., No. 2 Pratt & W.
Shapers, 16" and 20" Smith & Mills.
Shaper, 20" Stockbridge.
Shaper, 20" Steptoe, geared.
Shaper, 30" Steptoe, geared.
Turret, 21" Gisholt.

FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse 216-218 Penn Ave., Pittsburgh, Pa.

Good Used Equipment.

ELECTRIC TRAVELING CRANES.

50-ton Niles, 61' 7" span, 550 v., d. c., 10-ton aux.
25-ton Browning, 40' 0" span, 220 v., d. c., 5-ton aux.
25-ton Browning trolley, 3 motor, 220 volts, d. c.; will supply girders length required.
21, 14 and 4½ h. p. Shaw crane motors, 220 v., d. c.
10 h. p. Akron crane motor, 220 v., d. c.
Hand cranes, 2 to 7½ ton, 22' span
Hand crane, 10 ton, 55' span.
Hand crane, 20 ton, 29' 6" span.

MISCELLANEOUS.

Angle shear, double, No. 2 H. & J., cap. 6x6½".
Bending roll, 6', drop end, rolls 6½" and 8".
Bending and straightening machine, 24" gap, 9" jaw.
Cold saw, Newton, 48" blade, 2 tables.
Drill, No. 3 Foote-Burt, 8 spindle, cap. 1½".
Drill press, 36" back geared, sliding head.
Press, No. 19 Avery, o. b. i., 2" stroke. (3).
Press, No. 67 Stoll, 3" and 4" stroke, 13,000 lbs.
Press, trimming, No. 11 Perkins, 4" stroke.
Press, No. 65 Toledo, cam, 7" and 4" stroke, 13,000 lbs.
Pump, triplex, 3½"x10" Deane, fig. 1516, belt driven.
Pump, 4"x4" Deane, fig. 889, belt driven.
Pump, triplex, 10"x10" Gould, belt driven.
Punch, hand, No. 5-B New Doty, cap. 4x3", 15" throat.
Punch press, No. 225 Adriance, 2" stroke, geared.
Punch and shear, Coulter & McKenzie, cap. 3"x3" spring steel.
Punch and shear, Cleveland, cap. 1"x3", 28" throat.
Punch and shear, No. 3 H. & J., cap. 1½x1, 36" throat.
Punch and shear, steam driven, cap. 3x1½", 48" throat.
Rivetter and upsetter, 1½" cap. Acme.
Rolling mill, 1 stand, 2 high, rolls 10" diam.
Shear, No. 2 Farrell alligator, cap. 1" square.
Shear, lever, dbl., cap. 2" square.
Shear, No. 6 Perkins guillotine, cap. 2½" square.
Shear, Lennox rotary bevel, cap. ½" plate.
Shear, Lennox rotary splitting, cap. ½" plate.
Shear, splitting plate, 18" blade, cap. ½".
Wall drills, 15' reach.

Quick shipments—good condition.

SECOND-HAND MACHINERY

FOR SALE BY

W. L. Perkins, Jr.,

149 Broadway, New York

Boring mill, 42" Niles car wheel.
 Hammer, steam, 2500 lbs. Bement, single frame.
 Lathe, 18"x 8' LeBlond, c.r., cross fd.
 Lathe, 20"x 8' American, c.r., cr. fd.
 Lathe, 21"x 8' LeBlond, c.r., cross fd.
 Lathe, 20"x 8' Blaisdell, c.r., cross fd.
 Lathe, 20"x 8' Blaisdell, c.r., cross fd.
 Lathe, 26"x 16', shell boring.
 Lathe, 40"x 12' Fitchburg, c.r., cross fd.

Lathe, 40"x 18', shell boring.
 Lathe, 60" Bement, dbl. hd., wheel.
 Miller, 24"x 14' Bement, slab.
 Miller, 42"x 14' Newton, slab.
 Miller, 20" Sellers, vertical.
 Nut tapper, 1 1/2" six spd. Acme.
 Planer, 30"x 30"x 6' Pond, 1 head.
 Punch, No. 3 Long & Allstatter, spacing.
 Turret lathe, 32" Grant.

FOR SALE BY

Clark Machinery Co.,

1302 Ontario Ave., Cleveland, O.

Band saws, 26" to 36", (3).
 Blower, No. 8 Buffalo Forge Co.
 Blower, No. 1 Root, positive pressure.
 Centering machine, No. 1 P. & W.
 Drill press, single spindle sensitive.
 Drill press, sgl. spdl. ball bearing.
 Drill press, 4-spindle 20" Barnes automatic, all spindles power feed.
 Drill press, 4-spindle Prentice Bros.
 Grinder, No. 3 Oesterlein univ., new.

Lathe, 16"x 6' Pratt & Whitney.
 Lathes, wood turning, (2).
 Miller, double end valve.
 Miller, vertical, table 22"x 54".
 Millers, Garvin hand millers, (2).
 Millers, Garvin, Lincoln type, (2).
 Pipe machine, 6" capacity.
 Plating dynamos, 300, 450 & 1200 amp.
 Screw machines, No. 4 Wood, (2).
 Shaper, 15" Hendey.
 Turret lathes, 24" J. & L. gd. hd., (2).

FOR SALE BY

The Machinery Warehouse,

35th & Laflin Sts., Chicago, Ill.

The following 60 cycle, 3 phase, a. c. motors, with condition guaranteed, bases, pulleys and starters:

100 h. p. General Electric	720 r. p. m.	440 volt.
50 h. p. General Electric	1200 r. p. m.	220 volt.
40 h. p. Triumph	1150 r. p. m.	440 volt.
25 h. p. General Electric	1200 r. p. m.	220 volt.
20 h. p. General Electric	1200 r. p. m.	220 volt.
15 h. p. General Electric	1200 r. p. m.	220 volt.
7 1/2 h. p. Allis Chalmers	1700 r. p. m.	220 volt.

The 25, 40 and 50 h. p. machines are slip ring type and have drum controller, grid resistance and oil switch. The other machines have starters with no voltage release.

FOR SALE BY

The Canton Machine Shop,

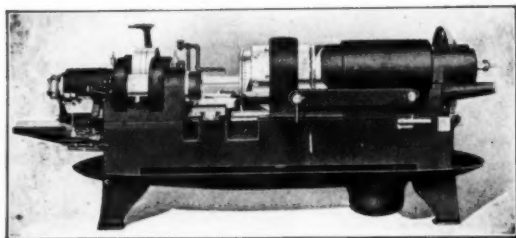
320 Rex Ave., Canton, Ohio

Belt polishing machine.
 Buffing lathe.
 Buffing lathe, double end.
 Die grinder.
 Drill, 20", back geared.
 Drill, 24", s. h., b. g.
 Drill, 30", s. h., b. g.
 Drill, 36", s. h., b. g.
 Emery grinders, (3).
 Lathe, 13"x 5' Barnes.
 Lathe, 16"x 8', plain.

Lathe, 18"x 8' Mueller.
 Lathe, 20"x 12' P. & W., t. a.
 Lathe, 24"x 10', 5" raise block.
 Lathe, 30"x 12' Porter.
 Milling machine, No. 5 Brainard.
 Pipe machine, No. 7 Jarecki.
 Pipe machine, No. 11 Jarecki.
 Planer, 26"x 26"x 6'.
 Planer, 36"x 36"x 14' Powell.
 Punch press, No. 5 Farrell.
 Saw, power.

It's A Cleveland

4 $\frac{1}{4}$ " Model "A"
Automatic Screw Machine



We have Six of them
AS GOOD AS NEW

HILL, CLARKE & CO., Inc.
The Machinery Merchants

BOSTON, MASS.
156 Oliver St.

NEW YORK CITY
136 Cedar St.

Machine Tools

- 1—60'x60'x18' Woodward Powell Heavy Duty Planer, 4 heads, condition equal to new.
- 1—10' Niles Vertical Boring Mill, 2 swivel heads, A-1 condition.
- 1—No. 1 Barrett Cylinder Boring Machine, capacity 36"x6', 3¼" Bar, full equipment, excellent condition.
- 1—48" Niles-Bement-Pond Heavy Car Wheel Borer with self-centering chuck and power hoist, A-1 condition
- 1—36" Bement Car Wheel Borer with power hoist. Good condition.
- 1—18" Bement Crank Slotter, compound and circular table, condition equal to new.
- 1—20"x72" No. 5 Brown & Sharpe Universal Grinder, practically all regular equipment, good condition.
- 1—72"x25' New Haven Triple Geared Engine Lathe, available about September 1st. Fair condition, price right.
- 1—26"x25' Pond Lathe, Screw Cutting, double tool holder for shaft turning, chuck. Good condition. Bargain at \$1,000.
- 1—20"x17' Jones Lamson Lathe, screw cutting, full equipment, rebuilt and in A-1 condition. Will sacrifice at \$700.

Engineering Equipment

- 1—10-ton Toledo 3 Motor Electric Traveling Crane, 30' span, cab control, 220 V., D. C. Condition equal to new.
- 5—Reading 5-ton Hand Traveling Cranes, 18' span, each complete with a 5-ton Yale & Towne Triplex Hoist. Good as new.
- 3—5-ton Yale & Towne Triplex Hoists. Good as new.
- 2—3000 lb. Harrington Hoists, complete with trolley for 1 Beam.

Hydraulic Equipment

- Accumulator manufactured by W. H. Wood, plunger 8", stroke 10'. First class condition.
- Snow High Pressure Pump, Duplex, 16"x2-7/8"x12", steam driven, good condition.
- W. H. Wood Hydraulic Traveling Crane, 22' 6" span, capacity 8-ton, lift 30', complete with heavy chain connections.
- 3—W. H. Wood Hydraulic Jib Cranes, capacity 3 and 5 tons, lift 7', radius 38', complete with trolley.

Miscellaneous

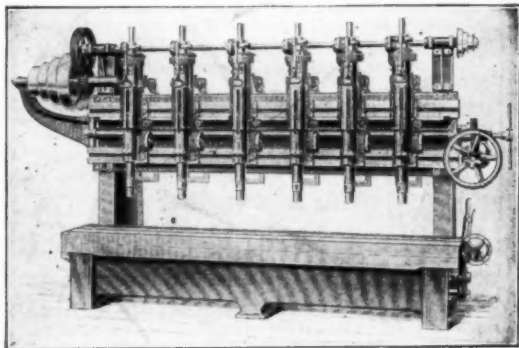
- 1—Smith Concrete Mixer, steam engine driven, no boiler, cap. 1 yd., mtd. on 4-wheel truck. Good condition. Price \$300.
- 1—Oliver No. 60 Universal Saw Bench for pattern makers. First class condition. Bargain.

We have many other machines in stock, such as Small Lathes, Drill Presses, Hack Saws, Motors, Gear Cutters, etc. Send us your inquiries, as we may have in stock just what you want.

D. M. Osborne Machinery Co.
American Trust Bldg., Cleveland, Ohio
Warehouse: West 9th & Front Sts.

Second-Hand
Six Spindle Gang Drill
Table 12 Ft. Long

Spindles Adjustable and Operated Independently
CAPACITY 2" HOLE



Also

- 18" Double End Punch and Shear, Capacity 1".
- 1—Horizontal Punch, capacity 1".
- 1—Horn Punch or Stake Rivetter.
- 36"x36"x9" Sellers Planer.
- 42" Gang Radial Drill.
- 2" Cleveland Automatic Screw Machine.
- 12x36" Landis Grinder.
- 16" Gould & Eberhardt Shaper.
- 28" Walcott Shaper.
- 40" Bement Car Wheel Borer.
- 6" Alligator Shear, capacity 1½" round.
- 12" Bertsch Plate Bending Rolls.
- 80 lb. Dupont Power Hammer.
- 600 lb. Lane Steam Drop Hammer.

Wickes Machinery Company
Jersey City, N. J.

In Hartford The Heart of New England

In Hartford, right in the heart of New England, we carry the largest stock of high grade machine tools that can be found between Boston and New York.

These include the products of the best manufacturers, comprising lathes, milling machines, grinders, drilling machines, etc., etc., as well as many a bargain in used machine tools in fine operating condition.

Try the P. & S. New England service. You might go farther away and not fare so well.

What do you need now?

Purinton & Smith, Hartford, Conn.

MILLING MACHINES

No. 2 Van Norman Duplex.
No. 7 Becker, Lincoln type.
Whitney Hand Miller.
Hendey Oscillating.

No. 1½ LeBlond Universal.
Vertical Attachment for
Kempsmith Miller.

GRINDERS

Cincinnati No. 2 Universal
Tool and Cutter.
2 12"x42" Landis Plain.

Automatic Grinder for cold
saws up to 25" diam.

MISCELLANEOUS

Drill, 4-sp., with pwr. fd., 15".
Drill, ball-bearing sensitive.
Drop Hammer, 50 lb.
Gear Cutter, 36" spur and
bevel.
Gear Cutter, No. 3 B. & S. auto.
Foundry Blowers, small.
Lathe, 42"x14' engine lathe.
Lathe, Screw-cutting Precision
Lathe, Lo-Swing.

Lathe Taper Attachment.
Oil separator, small.
Pinion Cutter, 5" cap.
Planer, 16"x16"x36" P. & W.
Press, No. 4 Stiles, with 900-lb.
fly-wheel.
Screw Machine, 1¼" Cleve-
land Automatic.
Suspension drill.
Turret lathe, 2¼" hole.

And many others

T. Crowther & Company, Inc.
170 Oliver Street, Boston, Mass.

Second-Hand Machinery

Boring Machines.

4½" Bar horizontal.

| 36" Niles pulley borer.

Drilling Machines.

Four spindle Barr, sensitive.

20" Prentice Bros., lever feed.

20" Hoefler three-spindle gang, power feed, back gears.

24" Prentice Bros., sliding head.

24" Sibley, sliding head, back gears, power feed.

28" Barnes four-spdl. gang, one back gears, three power fd., one tapping.

34" Barnes sliding head, back gears, power feed.

No. 413 Baker Bros., heavy pattern gang.

Gear Cutters.

16" Brown & Sharpe, spur and bevel.

No. 3 (26") Brown & Sharpe, spur fine condition.

36" x 12" Gould & Eberhardt, vertical cutting type, spur.

Grinders.

12" x 24" Modern plain, self contained, for 24" wheels.

Landis universal (small size).

Engine Lathes.

14" x 6' Putnam.

14" x 6' Blaisdell, rise and fall.

16" x 8' Bradford, compound rest.

20" x 8' Blaisdell, with 12" turret.

20" x 8' Blaisdell, plain rest.

24" x 6' Plamondon back geared pulley lathe.

24" x 6' Plamondon, plain rest.

21" x 10' Bradford, compound rest.

22" x 10' LeBlond, compound rest, turret on carriage.

36" x 8' Putnam pulley lathe.

Planers.

56" x 56" x 26' Bement, four heads.

Saws.

12" Burke cold saw.

| Millers Falls hack saw.

Screw Machines and Turret Lathes.

¾" Gates screw machine.

1½" x 9" Acme wire feed, power feed to turret.

1½" Gray turret lathe.

¾" Hartford automatics.

1½" Hartford automatic.

Miscellaneous.

Cutting-off machine, 2½" Betts.

Keyseater, No. 1 Baker with equipment.

Punch, No. 12 Lennox, hand.

Shaper, 34" Lodge & Davis.

Shaper, 10" Fitchburg, traveling head.

Marshall & Huschart Machinery Co.

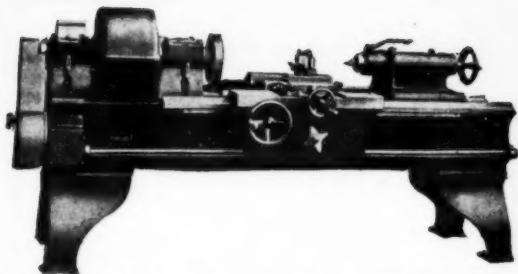
17 S. Jefferson St.
Chicago, Ill.

915 Chemical Building
St. Louis, Mo.

Used Machine Tools

- 16—21"x8'2" Roulsted Engine Lathes.
- 39—21"x8'2" Roulsted Turret Lathes.
- 2—26"x11' Douglass Engine Lathes.
- 3—18"x 8' Reed - Prentice Turret Lathes.
- 2—26"x8'6" Dodge Turret Lathes.
- 10—16"x8' Simplex Turret Lathes.
- 4—24"x8' Flather Turret Lathes.
- 6—24"x7' Allis - Chalmers Cutting-Off Machines.
- 6—Knowlton Cutting-Off Machines, 20" Saw.
- 1—24" Grant Stamping Machine.
- 1—Dwight Slate Marking Machine.
- 2—West Tire Setters.
- 1—300-ton Hydraulic Press, complete.
- 1—Machine for spraying varnish in shells.
- 2—No. 50 Gardner Grinders.
- 45—3¾" Murchey Collapsible Taps.
- 1—Mitts & Merrill Keyseater.

**Purchasing Agent,
Mead - Morrison Manufacturing Co.,
East Boston, Mass.**



In Stock for Immediate Shipment

50 New Simplex Single Purpose Heavy Duty Lathes Back Geared

Specifications

Length of bed, 8 ft.
 Distance between centers, 34 in.
 Height from floor to center, 40 in.
 Swing over vees, 16 in.
 Swing over slide, 10 in.
 Front spindle bearing, $4\frac{1}{2}$ in. dia.,
 $8\frac{1}{2}$ in. long.
 Rear spindle bearing, $3\frac{1}{2}$ in. dia.,
 $7\frac{1}{2}$ in. long.
 Single pulley drive, size drive pulley
 on head-stock 12 in. dia. for
 six-inch belt.
 Tailstock spindle, $3\frac{1}{2}$ in. dia., 6 in.
 travel.
 No. 5 Morse Taper center.
 Tool slide, $11\frac{3}{4}$ in. wide.
 Carriage bearings on vees, 30 in.
 Ring oiling bearing in headstock.
 Longitudinal power feed with
 single automatic stop.

Silent chain drive to feed.
 With slip gears for changing feed.
 Feeds, .020 in., .040 in., .060 in.,
 .080 in., .100 in.
 Gear ratio, $6\frac{1}{2}:1$.
 Face of gears, $2\frac{3}{4}$ in., 6-pitch.
 Two-speed countershaft.
 Apron shrouded box type.
 All gears steel.
 Shipping weight, approximately
 4100 pounds.

Equipment

Two No. 5 Morse taper Centers.
 One Plain or European Tool Post.
 Two-speed heavy countershaft.

Countershafts

Main drive pulley, 12 in. x 6 in.
 Two friction pulleys, 14 in. x 5 in.
 10 in. Drop Hangers, Shaft 1 $1\frac{1}{16}$
 in. diameter.

We have sold a considerable number of these lathes to
 Munition Manufacturers making High Explosive and Shrapnel
 Shells.

They have also done excellent work in Heavy Plain
 Turning and Boring.

Price, each, for Domestic Shipment \$645.

Price, each, for Export Shipment \$670.

L. R. Meisenhelter Machinery Co.

N. E. Cor. 4th and Arch Sts.,

Philadelphia, Pa.

Desirable Tools

18"x96" No. 28 Brown & Sharpe
Plain Grinder.

Pratt & Whitney Surface Grinder.

Three 2¼" Gridley Single Spindle
Automatics.

4½" Williams Double Tool Cut-
ting Off Machine.

No. 1½ Garvin Universal Milling
Machine.

Three new No. 2 Surface Grinders.

Lynd-Farquhar Company

Boston, Massachusetts

Second-Hand Machines---

LATHES.

18"x10' Rahn-M., s.b.g., hol.sp.

16"x8' Porter, s.b.g., c.&s.r., p.c.f.

14"x6' Hamilton style A., oil pan,
tapping and relieving atts

11"x5' P. & W. s.b.g., pl. rest, c.s.

20" Porter patternmakers' lathe.

No. 6 P. & J. auto. chuck'g. (2).

3"x36" J. & L. turret, all gd. hd.

No. 2-A W. & S., hol. hex. tur-
ret, complete with bar equip.

DRILLING MACHINES.

4-sp., 14" Henry & W., b. b.

2-sp. 20" W. F. & J. Barnes.

PUNCH PRESSES.

No. 19 Bliss, o.b.i., auto. fd., b.g.

No. 3A Willard, o. b. i.

No. 1 Heartley, solid back.

No. 472 Consolidated, dbl. cr. 4"

Walsh hand screw press.

Perkins screw press.

GRINDERS.

16x60 Landis plain, with 2 sets
hds., for plain cylindrical and
crank grinding.

12x36 Cincinnati plain.

No. 1 Landis universal.

MISCELLANEOUS.

Bending brake, 16" Dries & K.

Cornice brake, 50" Peck, S. & W.

Gear cutter, 24" Whiton.

Miller, pl. mfg., Grand Rapids.

Miller, Lincoln ty., Kemp Smith.

Miller, valve, 4-sp. W. & S.

Rolls, 4" Peck, S. & W., 4" diam.

Rolls, 7", diameter 6½".

Saw, power hack, Racine No. 1.

Saw, power hack, Royal No. 3.

Saw, power hack, W.C. & W.Co.

Screw mchs., No. 6 W. & S. com-
plete, power fd. to turret, (2).

Shears, circle.

Shears, gap squaring, 62"

Bertsch, foot power.

M. J. Walsh Mchy. Co., 141 Sycamore St.,
Milwaukee, Wis.

The World's BIGGEST and BEST Stock of USED MACHINE TOOLS

632 Machines to Select From. Judge by These Samples

PLANERS

- 8' x 8' x 16' Betts, 4 heads, heavy type, splendid condition.
- 8' x 8' x 16' Betts, as above.
- 54" x 54" x 24' Sellers, spiral gear drive, 3 heads.
- 54" x 54" x 15' Pond, 2 heads.
- 54" x 54" x 15' Sellers, 2 heads.
- 40" x 40" x 8' Betts, single head, very heavy type.
- 30" x 30" x 6' Sellers, 1 head on cross rail, one side head.
- 30" x 30" x 10' Pease.
- 30" x 30" x 8' Harrington, 2 heads.
- 25" x 25" x 6' Sellers, single head.

VERTICAL BORING MILLS

- 10'-14' Pond, 2 swivel heads, heavy type, splendid condition.
- 14" Standard, 2 swivel heads.
- 36" Bullard, 2 swivel heads, back geared.
- 30" Bullard, single turret head.

HORIZONTAL BORING MILLS

- Niles, 3½" bar, knee type.
- Beaman & Smith, cylinder, 2 boring and 1 facing sp., square and circular table.
- (2) Bement, 3" bar, knee type.

LATHES

- 60" x 20' Pond, triple geared, face plate drive.
- (4) 27" x 14' Lodge & Shipley, geared head, single pulley drive, quick change gear, etc., etc.
- 52" x 16' Gleason, face plate drive.

MULTIPLE DRILLS

- Baush, 12 spindles, 12 1½" holes, weighs 22,000 lbs., good as new.
- Baush, 10 spindles, 1½" holes, drills rectangular space 36" x 48", weighs 25,000 lbs., good as new.
- Footo-Burt, 2 spindle, adjustable rail, extra heavy, 60" maximum distance center to center of spindles, weighs 12,500 lbs.

RADIAL DRILLS

- 10' Baush.
- 6' Pond.
- 6' Dreses.
- 5' Prentice.
- 4' Prentice, tapping attachment.
- 4' Bickford, tapping attachment, direct connected to variable speed motor.
- 4' Niles, arranged for motor drive.
- 4' Fish.
- 42" Bickford, single pulley drive through gear box.

SLOTTERS

- 36" Bement, geared, weighs 35,000 lbs.
- 12" Bement.

MILLING MACHINES

- No. 2 Brown & Sharpe Universal, dividing heads, etc.
- No. 2 Putnam Universal, dividing heads, etc.
- Beaman & Smith, open side, planer type, table 24" x 6', 1 vertical spindle.
- Ingersoll, planer type, 36" x 36" x 8', 2 vertical spindles.
- All machines in good working order and condition, inspection our warehouse, immediate delivery.

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One 8"x18" Modern Plain Grinder, new.

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One Niles 37" Vertical Boring Mill, two heads on the cross rail.

One Baush Radial Drill, 6' arm, plain, cone driven.

One Diamond Machine Co. Roll Grinder, capacity 8"x26".

One No. 5 Becker Vertical Milling Machine, with power rotary att.

One No. 3 Cincinnati Plain Milling Machine.

One 36" Bickford Radial Drill, with tapping attachment.

One 26"x7" Niles Planer, parallel drive, one head.

One Wheeler Planer, 24"x24"x6', in excellent condition, one head.

One Whitcomb Crank Planer, used less than two years, in excellent condition.

One 24"x6' Whitcomb Planer, one head, new.

One Flather Gear Cutter, for spur gears only, capacity 8"x26".

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1—31"x31"x8' Whitcomb Planer.

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3—Wilmarth & Morman No. 1 Universal Grinders (new).

2—Wilmarth & Morman No. 3 Surface Grinders (new).

1—24"x12' Bradford Q. C. Lathe (new).

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- 1-Betts, 2½" bar.
- 1-Bement, 2½" bar.
- 1-Beaman & Smith, 2½" bar.
- 1-No. 3 Barnes Double End.
- 1-No. 4 Newton two 4" spindles.
- 1-Beaman & Smith 2-spdl. Cylinder Borer, cross milling head.

VERTICAL BORING MILLS.

- 1-64" Poole, 2 heads.
- 2-72" Bickford, 2 heads.
- 1-42" Betts Car Wheel Borer.
- 1-36" Brown & Sharpe.
- 2-34" Colburn.
- 1-32" Rogers.
- 1-31" Baush.

PLANERS.

- 1-32"x32"x10' Gray.
- 1-32"x32"x 8' Gray.
- 1-30"x30"x10' Powell.
- 1-26"x26"x 6' American.
- 1-24"x24"x 6' Cincinnati.
- 1-24"x24"x 5' Gray.
- 1-24"x24"x 4' Gray.
- 1-23"x23"x 5' Flather.
- 1-22"x22"x 6' American.

RADIAL DRILLS.

- 3-5' Niles Semi-Universal.
- 1-4½' Niles Full Universal.
- 1-3½' Gang.
- 1-3' Prentice.
- 1-3' Mueller.
- 2-2½' Mueller.
- 4-2½' Fossdick.
- 1-2½' Dreses.

MILLING MACHINES.

- 1-60"x54"x8' Ingersoll, Slab.
- 1-Beaman & Smith, Slab, 3-spindle.
- 1-No. 2 Beaman & Smith, Slab.
- 1-No. 3 Hendey.
- 1-No. 2-Cincinnati universal.
- 1-No. 20 Oesterlein Universal.
- 1-No. 1½ Brown & Sharpe univ.
- 1-No. 25 Becker.
- 1-No. 5 Schuchardt & Schutte.

LARGE LATHES.

- 1-42"x13' Draper.
- 11-40"x16' Pittsburgh.
- 1-36"x16' Springfield.
- 1-32"x14' New Haven.
- 1-21"x14' Pond.
- 1-31"x12' Pond.
- 3-30"x16' Lodge & Shipley.
- 5-28"x14' Lodge & Shipley.
- 28-26"x12' Putnam.
- 10-28"x10' Niles-Bement-Pond.
- 2-26"x12' Wickes.
- 1-26"x12' Schumacher & Boye.
- 13-26"x10' American.
- 1-26"x10' Prentice.
- 16-24"x10' Lodge & Shipley.

TURRET LATHES.

- 99-24" Gisholt.
- 52-21" Gisholt.
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- 2-24"x26" Greenlee.
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MILLING MACHINE--"Planer type" 24"x24"x8' Bement-M.
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SLOTTER--12" stroke, Bement.
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STEAM HAMMER--2,500 lbs. Single Frame, Bement-Miles.
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2-20" stroke, Back-geared.
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1-28" stroke, Back-geared, Speed-Box.
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CRANK SHAPE—32" str., sgl. pulley drive, 2500 lbs. S. & M.
WHEEL LATHE—80" sw., dbl. hd., for driving wheels, Bement-M.
STEAM HAMMER—2500 lbs. Single Frame, Bement-Miles.
HORIZONTAL BORING and DRILLING MACHINE—12" swing spindle, 1500 lbs. 16" x 20".

SHAPERS—2-16" stroke, back-gear.
2-20" stroke, back-gear.
3-25" stroke, back-gear.
1-28" stroke, back-gear.
2-32" stroke, back-gear.

Other Tools—Immediate Shipment

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- 24" x 24" x 6' Gray, 1 head.
- 30" x 30" x 8' Pond, 1 head.
- 36" x 36" x 8' Putnam, 1 head.
- 36" x 36" x 11' Sellers, 1 head.

Shapers

- 28" Triple-gear, Smith & Mills.
- 23" Crank, Gould & Eber. Back-gear.
- 20" Crank, Gould & Eber. Back-Gear.
- 16" Crank, Cincinnati.
- 12" Traveling-head, Sellers.

Turret Lathes

- 21" Swing, gap 32", Gisholt.
- 2x24" Flat Turret, Slid. Head, J. & L.
- 20" Swing (2) Full-Auto. Porter & J.

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- 16" Swing 6' Bed, Reed.
- 18" Swing 8' Bed, heavy Seneca Falls, Qk.-change, Taper, Draw-in att. Chucks.
- 18" Swing 8' Bed, Le Blond.
- 18" Swing 10' Bed, Porter.
- 18" Swing 10' Bed, Draper.
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- 22" Swing 10' Bed, Porter.
- 24" Swing 15' Bement.
- 36" Swing 16' Putnam.
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- 8—Heavy, 21" x 12" Quick-change, 3-step Cone, Double Back-gear.
- 4—Heavy, 21" x 10" Quick-change, 3-step Cone, Double Back-gear.

New Lathes—Continued

- 8—Heavy, 18" x 12' Quick-change, 3-step Cone, Double Back-gear.
- 8—Heavy, 18" x 10' Quick-Change, 3-step Cone, Double Back-gear.
- 8—Heavy, 18" x 8' Quick-change, 3-step Cone, Double Back-gear.
- 2—Heavy, 16" x 8' Quick-change, 3-step Cone, Double Back-gear.
- 2—Standard 16" x 6' Semi-quick-change, Single Back-gear.

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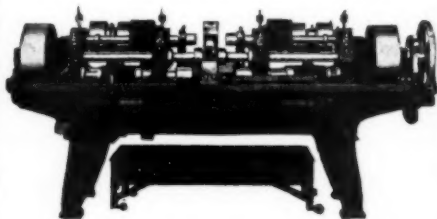


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